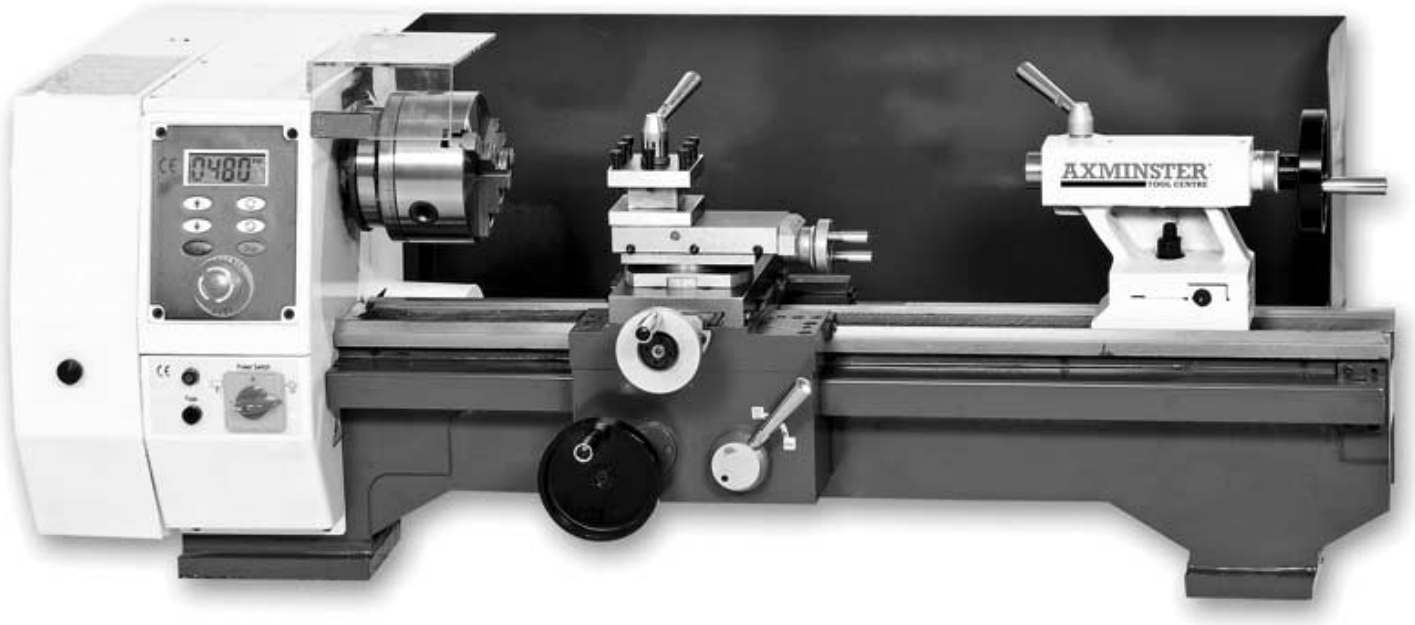
AXMINSTER®
TOOL CENTRE

SIEG SC6 Variable Speed Lathe

951542 Mill Attachment for the SC6 Lathe.
(Manual See Pages 31-50)



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SIEG®

Safety Instructions For Lathe

1. **MAKE SURE ALL GUARDS** are in place and that the lathe sits on a flat, stable surface.
2. **BEFORE STARTING THE LATHE** be certain the workpiece has been properly engaged in the chuck, tailstock, center, and that there is adequate clearance for full motion.
3. **ADJUST TOOL POST** to provide proper support for the turning tool you will be using. Test tool post clearance by rotating workpiece by hand before turning lathe on.
4. **SELECT THE TURNING SPEED** which is appropriate for the type of work, material, and tool bit. Allow the lathe to gain its full speed before beginning a cut.
5. **NEVER REVERSE MOTOR DIRECTION** while the lathe is in motion.
6. **DO NOT STOP LATHE USING YOUR HAND** against the workpiece or chuck.
7. **DO NOT LEAVE LATHE RUNNING UNATTENDED** for any reason.
8. **NEVER LEAVE A CHUCK KEY IN THE LATHE CHUCK.**
9. **NEVER OPERATE THE LATHE WITH DAMAGED OR WORN PARTS.** Maintain your lathe in proper working condition. Perform routine inspections and maintenance promptly when called for. Put away adjustment tools after use.
10. **MAKE SURE LATHE IS TURNED OFF**, disconnected from its power source and all moving parts have come to a complete stop before starting any inspection, adjustment, or maintenance procedure.
11. **KEEP LOOSE CLOTHING ARTICLES** such as sleeves, belts or jewellery items away from the lathe and drill spindles.
12. **ALWAYS USE THE PROPER CUTTING TOOLS** for the material you are turning, make certain they are sharp and that they are held firmly in the tool post.
13. **ALWAYS PLACE A BOARD OR PIECE OF PLYWOOD ACROSS THE BEDWAY** when removing or installing chucks to avoid the possibility of a finger pinch occurring between a loose chuck and the edges of the bedway.

CAUTION

No list of safety guidelines can be complete. Every shop environment is different. Always consider safety first, as it applies to your individual working conditions. Use this and other machinery with caution and respect. Failure to do so could result in serious personal injury, damage to equipment or poor work results.

WARNING

Like all power tools, there is danger associated with the Lathe. Accidents are frequently caused by lack of familiarity or failure to pay attention. Use this tool with respect and caution to lessen the possibility of operator injury. If normal safety precautions are overlooked or ignored, serious personal injury may occur.

GROUNDING

In the event of an electrical short, grounding reduces the risk of electric shock by providing a path of least resistance to disperse electric current.The outlet must be properly installed and grounded in accordance with all local codes and ordinances.

SET-UP

Unpacking

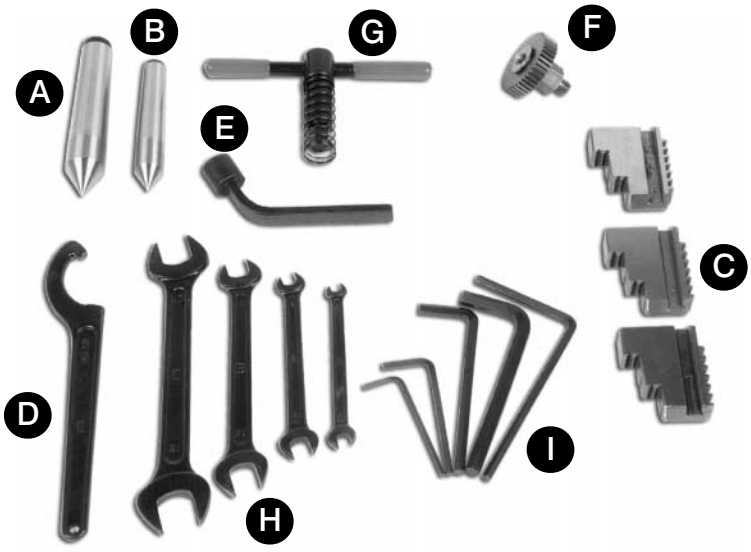
This lathe is shipped from the manufacturer in a carefully packed crate. If you discover the machine is damaged after you've signed for delivery, and the truck and driver has gone, you will need to file a freight claim with the carrier. Save the containers and all packing materials for possible inspection by the carrier or its agent. Without the packing materials, filing a freight claim can be difficult. If you need assistance determining whether you need to file a freight claim, or with the procedure to file one, please contact your dealer.

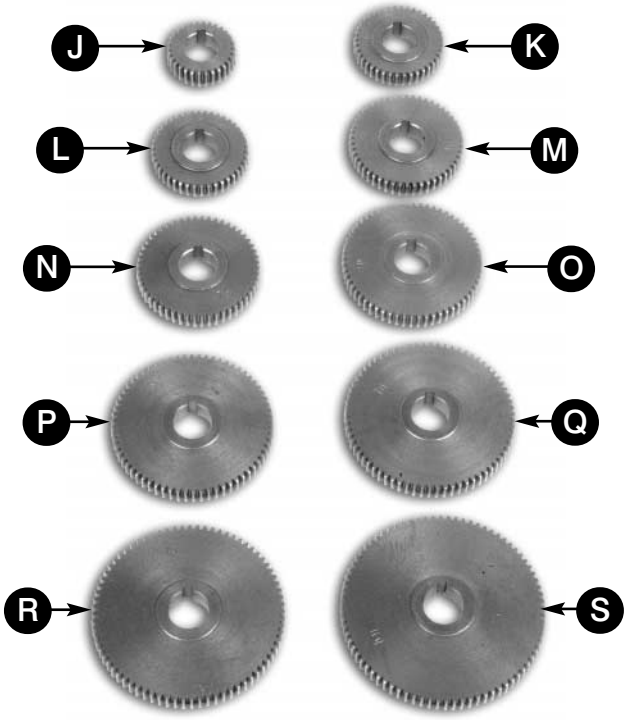
When you are completely satisfied with the condition of your shipment, you should inventory its parts.

Clean Up

The unpainted surfaces are coated with a waxy oil to protect them from corrosion during shipment. Remove this protective coating with a solvent cleaner or citrus-based degreaser. To clean thoroughly, some parts may need to be removed. **For optimum performance from your machine, make sure you clean all moving parts or sliding contact surfaces that are coated.** Avoid chlorine-based solvents as they may damage painted surfaces should they come in contact. Always follow the manufacturer's instructions when using any type of cleaning product.

Lathe Accessory's



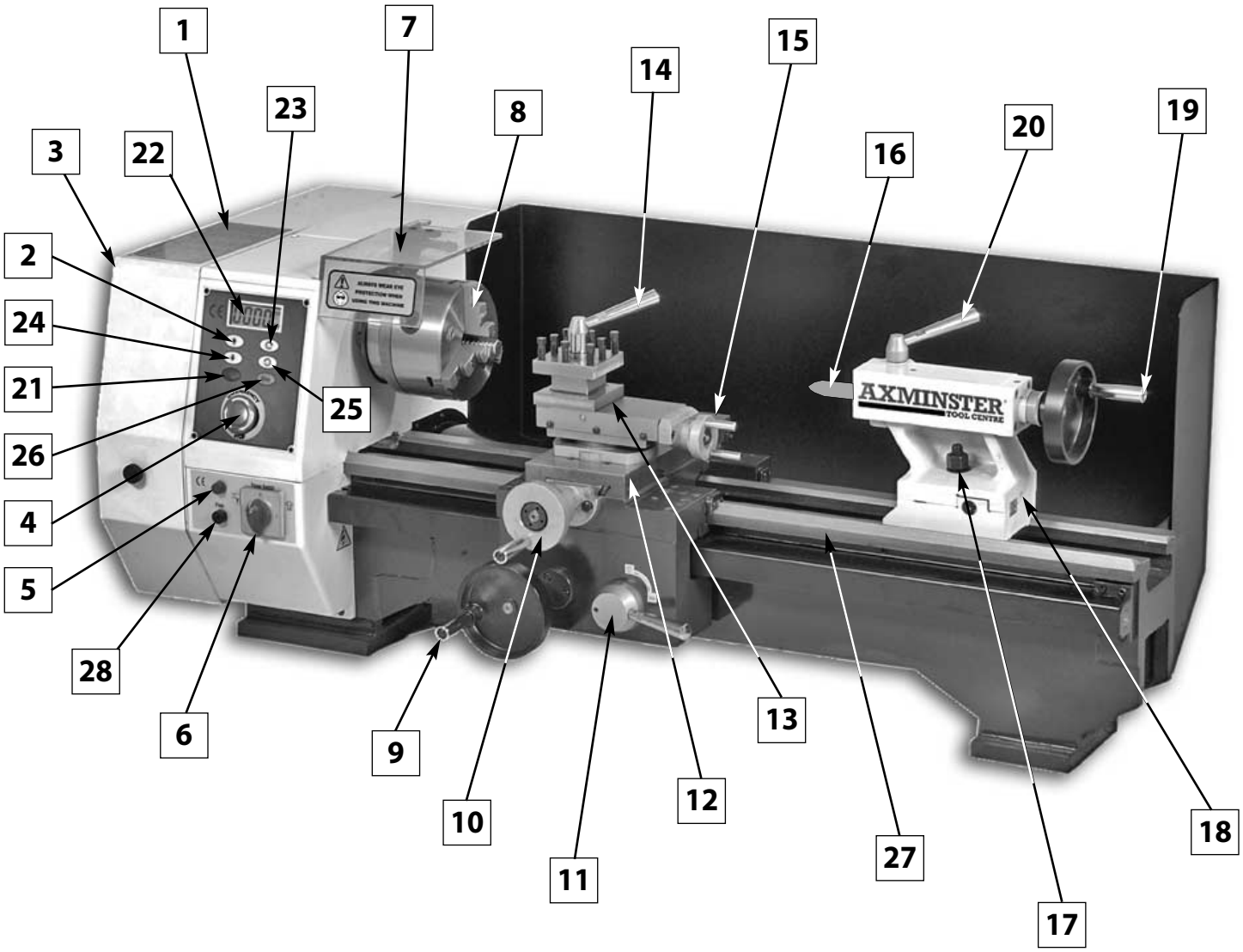


A) 1 No. Tailstock Centre
B) 1 No. Headstock Dead Centre
C) 3 No. External Jaws
D) 1 No. 'C' Spanner
E) 1 No. Spanner for Change Wheel
F) 1 No. Leadscrew Reversing Sprocket (Extra fixed-shaft gear)
G) 1 No. Chuck Key
H) Set of Spanners 19,14,10,7mm
I) Set of Allen Keys

Gears
J) 1 No. 30 Teeth
K) 1 No. 40 Teeth
L) 2 No. 42 Teeth
M) 1 No. 50 Teeth
N) 1 No. 52 Teeth
O) 1 No. 60 Teeth
P) 1 No. 66 Teeth
Q) 1 No. 70 Teeth
R) 1 No. 75 Teeth
S) 1 No. 80 Teeth

IDENTIFICATION OF SC6 VARIABLE SPEED LATHE

Code: 210172



1. Thread Pitch Gearing & Speed Charts
2. Speed Up Button
3. Machine ID/Safety Label
4. Emergency Stop Switch
5. Lathe Power Indicator Light
6. Selector Switch
7. Headstock Eyeshield
8. Lathe Chuck
9. Carriage Feed Handwheel
10. Cross Slide Handwheel
11. Automatic Carriage Feed Lever
12. Compound Slide
13. Tool Post
14. Tool Post Lock Handle
15. Compound Slide Handwheel
16. Tailstock Centre
17. Tailstock Clamp Bolt
18. Tailstock Axis Alignment Indicator
19. Tailstock Barrel Handwheel
20. Tailstock Centre Lock
21. Start Button
22. Digital Readout Speed Display (RPM)
23. Forward Button
24. Speed Down Button
25. Reverse Button
26. Stop Button
27. Lathe Bed
28. Fuse

INITIAL START SC6

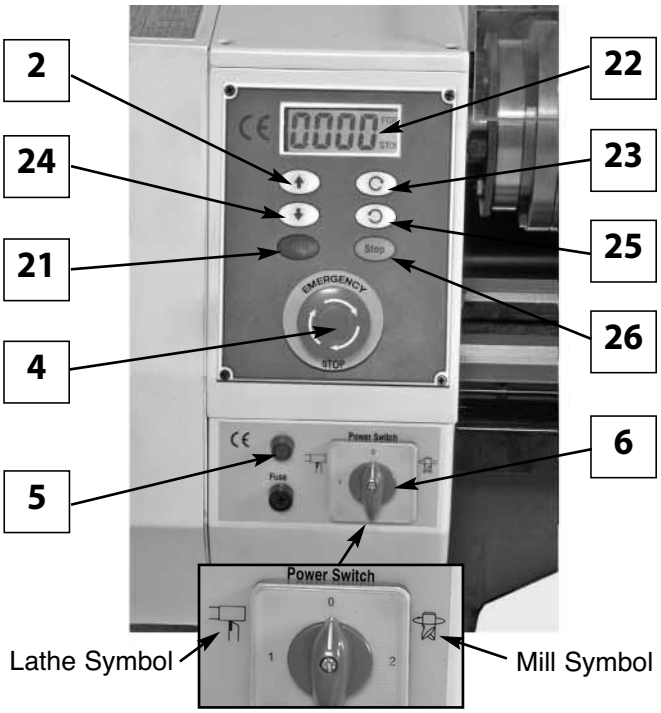
Test Run Lathe

Before continuing to operate, test run the lathe to make sure it runs properly.

To test run the lathe:

1. Make sure that there is NOT a chuck key inserted in the chuck, and that the lathe eye-shield is in the down position over the lathe chuck. *Make this step a habit that you perform every time you start the lathe.*

2. Familiarise yourself with the lathe controls shown in the figure below. Make sure the Emergency Stop Button **(4)** is pushed down before continuing.



3. Plug the lathe into the power outlet!

4. Move the carriage feed lever up to the disengage mode. It is important that the carriage feed is NOT moving and is in the neutral position until later.

5. Turn the switch **(6)** to the left for the lathe function. The power indicator **(5)** will light up. **NOTE** if it does not light up, unplug the lathe and check the fuse on the lathe and then the plug. Call our technical sales department on **0330 100 0299** if you are still having problems.

6. Release the Emergency Stop Button **(4)** by turning the knob head to right, the Digital Readout Speed Display **(22)** wlll come on. Press the start button **(21)**, the spindle will be forward turning; the speed is 100r/min. Press the reverse button **(25)** to turn the spindle in the oppsite direction.

7. Press the Speed Up Button **(2)** to increase the spindle speed or the Speed Down Button **(24)** to decrease it.

8. If the lathe over-loads, for example, cutting too much, just turn off the power by pressing the stop button **(26)** then switch it on again, by pressing the Start Button **(21)** and increasing the spindle speed as required.

9. Allow the lathe to run for at least two full minutes to make sure it is running satisfactorily.

10. Press the Emergency Stop Button **(4)** to stop the lathe instantly, the Digital Readout Speed Display **(22)** will go off. NOTE: If you lift up the eyeshield **(7)** it will also stop the lathe.

11. Stand to the side of the lathe chuck line of rotation, then refer to step (6 & 7).

12. Allow the lathe to run for at least two full minutes to make sure it is running satisfactorily.

13. Press the Stop Button **(26)** to stop the lathe spindle.

14. After the lathe has come to a complete stop, engage the carriage handwheel **(9)**, rotate the handwheel to centre the carriage on the bed, then disengage the handwheel.

15. Engage the automatic carriage feed lever **(11)**.

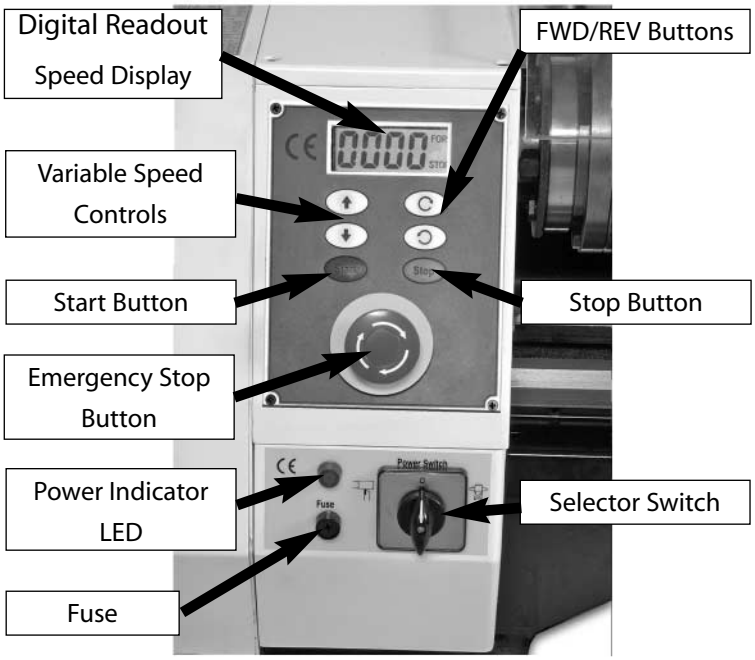
16. Stand to the side of the lathe chuck line of rotation, and press the Start button to turn the lathe *ON*.

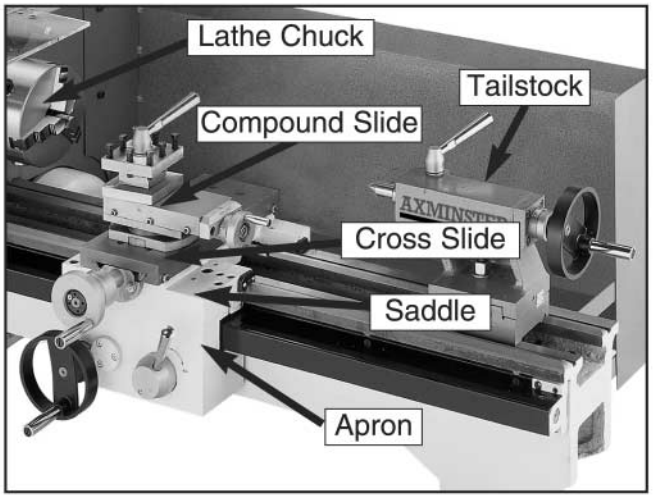
17. Verify that the carriage moves along the bed, and press the stop button to turn the lathe *OFF*.

18. If you have mounted the C6 Mill attachment (Part No: 600870) to the lathe, turn the selector switch **(6)** to the right to transfer power to the mill. NOTE: The lathe power indicator **(5)** will go out.

OPERATIONS

To get the most out of your machine, please take the time to familiarize yourself with the various controls as shown in Figures below.





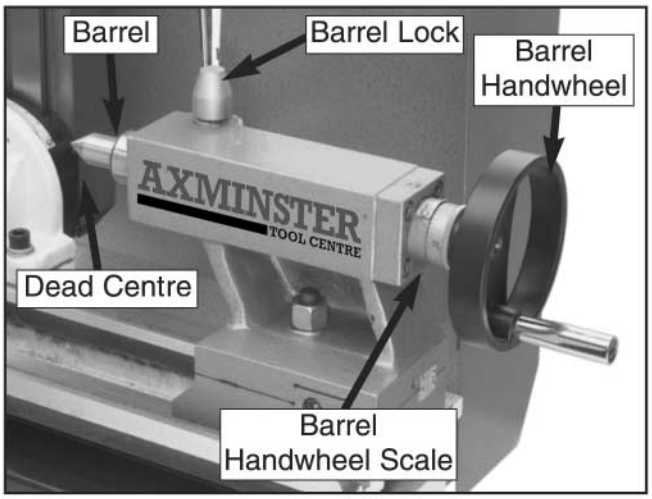
Lathe components

Installing Tailstock Dead Centre

There are 2 dead centres included with the Lathe. The smaller dead centre is a MT#2 (Morse Taper) and fits in the tailstock barrel.

To install the tailstock dead centre:

1. Familiarize yourself with the tailstock components shown below.



Tailstock components

2. Make sure that the MT#2 dead centre and tailstock barrel are clean and free of any dirt, dust, grease or oil. These parts will last longer and remain accurate when properly cleaned before each assembly. Morse tapers will not interlock when dirt or oil are present on the mounting surfaces.

3. Insert the end of the dead centre into the tailstock barrel, as shown below, until it seats tight enough that it will not rotate when turned by hand. *Note—do not worry about pushing the dead* centre *into the barrel too far. The force of the center contacting a mounted workpiece will fully seat the taper when the handwheel is tightened.*

4. Tighten the barrel lock to prevent the tailstock barrel from moving during operation.

Inserting dead centre into tailstock barrel

Removing Tailstock Dead Centre

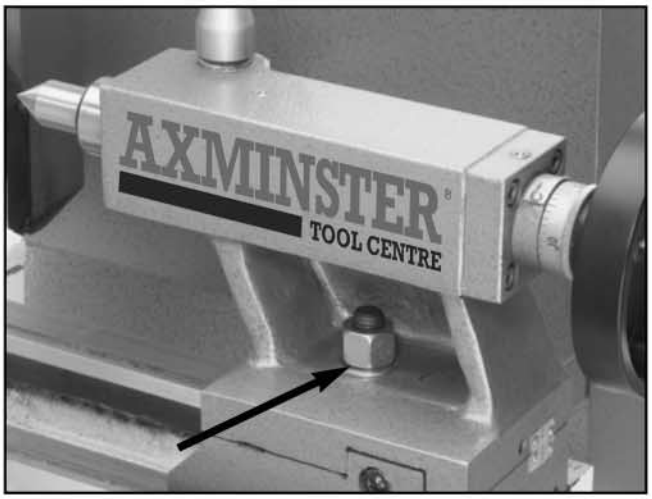
To remove the tailstock dead centre:

1. Use the barrel handwheel to move the tailstock barrel all the way back into the tailstock until the handwheel will no longer turn.

2. Pull the dead center out of the tailstock barrel.

Adjusting Tailstock Longitude Position

The tailstock on the Lathe clamps to the bed with the nut shown below. This nut allows the tailstock to be positioned longitudinally along the bed and then locked in place.



Tailstock clamp bolt

To adjust the tailstock longitude position:

1. Use a 17mm wrench to loosen the tailstock clamp bolt.

2. With your hands, move the tailstock into position along the bed.

3. Tighten the tailstock clamp bolt to secure the tailstock into position.

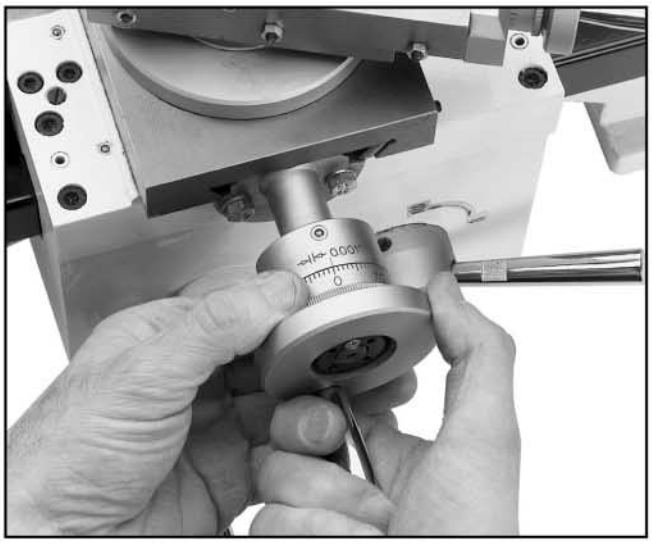
Adjusting Cross Slide

The cross slide is only designed to move perpendicular to the longitudinal axis of the lathe, and it features a scale on the handwheel that displays graduations of one thousandths of 25mm (0.025mm).

To adjust the cross slide:

1. Using the handwheel, back the cross slide away from your starting point by at least 0.4mm, then move the cross slide forward to your starting point. *Note—this procedure will clear any free movement (or backlash) in the lead screw so your handwheel scale reading will be accurate.*

2. Hold the handwheel still and turn the scale so the "0" mark lines up with the ".000" mark on the cross slide, as shown in the Figure below. As long as you avoid backlash by continuing to move the cross slide in the same direction, the scale on the handwheel will be accurate.



Adjusting handwheel scale

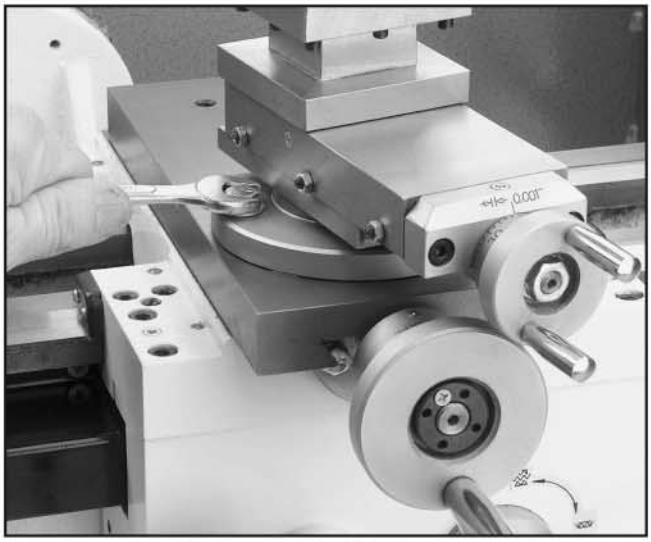
3. After moving the cross slide backward after your operation, remember to clear the backlash before moving the cross slide forward to the "0" mark for the next cut.

Adjusting Compound Slide

Similar to the cross slide, the compound slide features a scale that displays graduations of one thousandths of 25mm(0.025mm). Unlike the cross slide, the compound slide can be rotated to a set angle and then it can be moved back and forth along the axis of that angle.

To adjust the compound slide:

1. Loosen the compound slide bolts shown below to allow it to be rotated.



Compound slide bolts

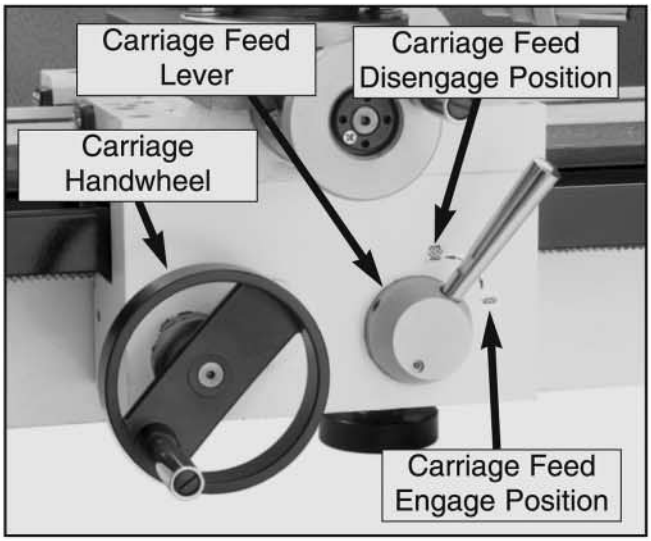
2. Rotate the compound slide to the angle needed for your procedure.

3. Tighten the compound slide bolts, and check the angle again to make sure it did not move during tightening.

4. Use the compound slide handwheel to move the tool back and forth along the axis of the new angle. Similar to adjusting the cross slide handwheel, make sure the threads are engaging and all backlash has been cleared before you set the handwheel scale to "0", or it will not be accurate.

Adjusting Carriage

Like most lathes, the longitudinal movement of the carriage (carriage feed) on the lathe can be controlled both manually and automatically. Before proceeding, take a closer look at the carriage controls shown below



Carriage controls

To move the carriage feed manually:

1. Push the carriage feed handwheel toward the carriage to engage the gear on the lead screw.

2. Rotate the handwheel clockwise to move the carriage right and rotate the handwheel counterclockwise to move the carriage left.

3. Set the handwheel scale in the same manner as described in the "Adjusting Cross Slide" instructions, and be sure to account for the backlash.

To use the automatic carriage feed:

1. Select the desired feed rate you need by looking at the charts on the lathe drive cover. When new, The lathe is geared for a carriage feed rate of 0.1mm per revolution.

   Use the manual feed handwheel to position the carriage to your desired starting point and set the scale on the handwheel to "0".

2. Move the carriage feed lever down to engage the half-nut, which in turn, makes the automatic carriage feed active.

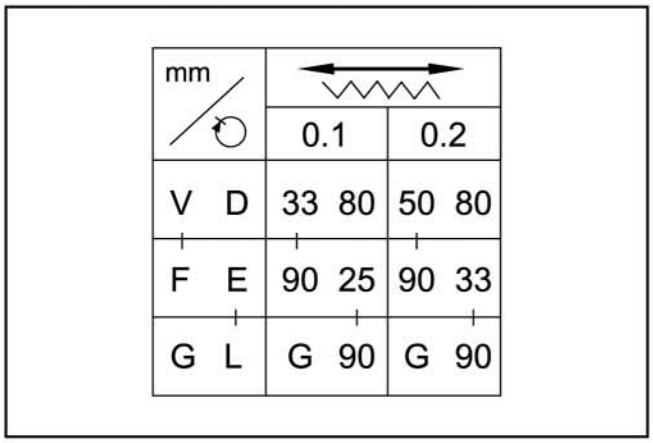
3. Pull out the carriage manual feed handwheel to unlock it so it does not rotate when the automatic carriage feed is engaged.

The carriage feed will now move forward or backward, depending on which direction you have selected for lathe rotation.

Understanding Gear Charts

The lathe can be geared for a variety of different feed rates, so charts are placed on the drive cover of the lathe that explain how to set up the gear combinations for each type of carriage feed application. These applications are broken into two categories of charts—turning and threading.

Turning Chart—The speeds given on the turning chart represent standard speeds for most types of turning applications. See below.



mm		0.1	0.2
V	D	33 80	50 80
F	E	90 25	90 33
G	L	G 90	G 90

Turning chart

Threading Charts—By arranging the gears as shown on the charts, you can set up the carriage feed to cut any of the thread pitches displayed. See below.

mm		0.4	0.5	0.6	0.7	0.8	1
G	D	G 80	G 80	G 80	G 80	G 52	G 66
F	E	30 80	30 60	30 50	42 60	60 80	60
L	G	75 G	80 G	80 G	80 G	75 G	G 80

mm		1.25	1.5	1.75	2	2.5	3
G	D	G 52	G 66	G 80	G 70	G 80	G 80
F	E	75 80	75 80	70 80	80	75 80	75 25
L	G	60 G	50 G	40 G	G 40	30 G	80 G

1"/n		10	11	14	19
G	D	G 80	G 80	G 80	G 80
F	E	66 40	60 40	75 50	50 40
L	G	52 G	52 G	66 G	75 G

1"/n		20	22	40	44
G	D	G 60	G 80	G 80	G 80
F	E	66 80	60 80	33 52	30 52
L	G	52 G	52 G	80 G	80 G

Threading charts

This is how to read the feed rate charts:

1. The box in the upper left-hand corner of each chart tells whether that chart represents carriage feed movement for standard or imperial threads. These boxes are shaded below.

mm	1.25	1.5	1.75
G D	G 52	G 66	G 80
F E	75 80	75 80	70 80
L=G	60 G	50 G	40 G

1"/n	10	11
G D	G 80	G 80
F E	66 40	60 40

The shaded box indicates whether the chart is for standard or imperial threads

2. The boxes in the top row of each chart (excluding the box in the left-hand corner) shows the thread pitches listed on that chart. These boxes are shaded below.

mm	0.4	0.5	0.6	0.7	0.8	1
G D	G 80	G 80	G 80	G 80	G 52	G 66
F E	30 80	30 60	30 50	42 60	60 80	60
L=G	75 G	80 G	80 G	80 G	75 G	G 80

The shaded boxes show the thread pitches listed on this chart

3. The boxes on the left-hand column (excluding the box in the upper left-hand corner) represent the gear positions on each shaft. These boxes are shaded below and the shafts are called out with arrows.

	mm	0.4
Upper Adjustable Shaft →	G D	G 80
Lower Adjustable Shaft →	F E	30 80
Pivot Shaft →	L=G	75 G

The shaded boxes show the thread pitches listed on this chart

4. Each shaft has room for two positions to mount the gears—a forward position and a rear position. Figure below separates these positions into different shades for you to understand better.

mm	1.25	1.5	1.75
G D	G 52	G 66	G 80
F E	75 80	75 80	70 80
L=G	60 G	50 G	40 G

Rear
Forward

The shaded boxes show the thread pitches listed on this chart

Both forward and rear positions must be filled on the shaft in order for the gears to work properly. A good example of this is the blank spot "G," as shown in the chart above. Although the chart shows this as a blank spot, there should actually be a spacer in this position on the machine. This spacer only reflects ACTIVE gear positions.

NOTICE

On some setups, smaller gears must be used as spacers on the adjustable shafts.

5. The lines between gears “D” & “E” and gears “F” & “L” on the chart below indicate where the gears should be in mesh.

mm	0.4	0.5	0.6
G D	G 80	G 80	G 80
F E	30 80	30 60	30 50
L⇌G	75 G	80 G	80 G

The shaded boxes highlight the gear mesh lines

6. The boxes shaded below represent the actual gear combinations required to cut the thread pitches.

mm	1.25	1.5	1.75	2	2.5	3
G D	G 52	G 66	G 80	G 70	G 80	G 80
F E	75 80	75 80	70 80	80	75 80	75 25
L⇌G	60 G	50 G	40 G	G 40	30 G	80 G

The shaded boxes show specific gear setups

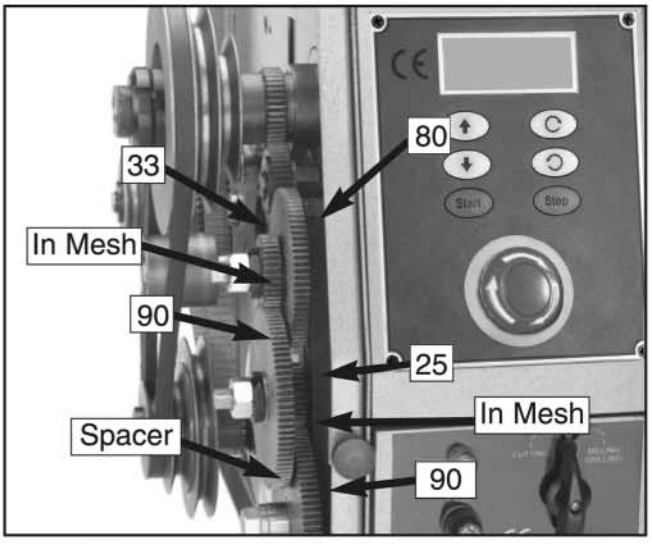
Here is a real-world example of a gear setup as shown on the chart:

When the lathe is shipped from the factory, it is geared for a carriage feed rate of 0.1mm per spindle revolution, or the gear combination shaded below.

mm	0.1	0.2
V D	33 80	50 80
F E	90 25	90 33
G L	G 90	G 90

Chart showing gear setup for 0.1mm

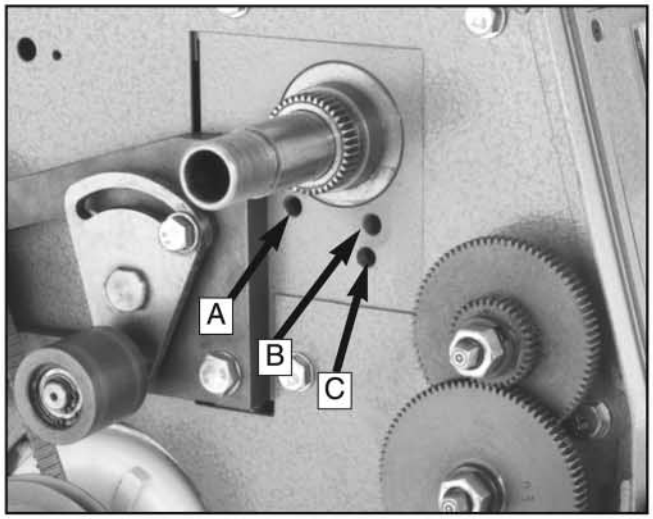
Figure below shows a profile of the 0.1mm feed rate actual gear setup on the machine. Notice how the gears mesh together in the locations displayed on the chart.



Actual gear setup for 0.1mm feed rate

Reverse Threading

The lathe can be setup to turn left-handed threads by adding another fixed-shaft gear and moving the original fixed-shaft gear to another mounting location. Figure below shows the three mounting locations for fixed-shaft gears (spindle drive pulley is removed for clarity). For illustration purposes, we label these mounting positions A, B & C.



Fixed-shaft gear mounting positions

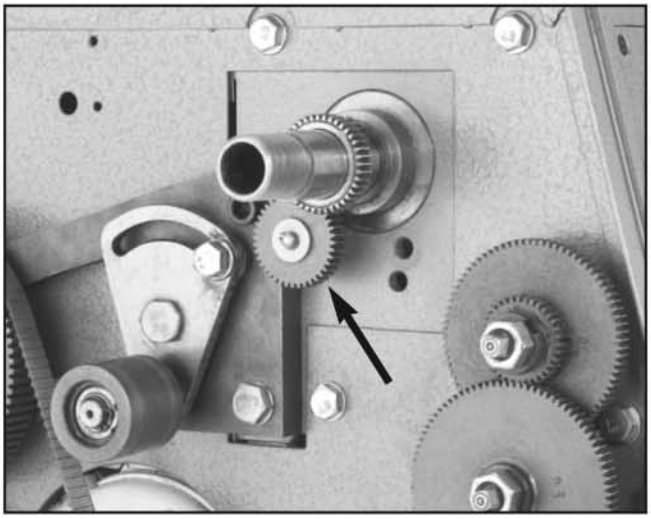
To set up the gears for reverse threading:

1. **Disconnect the lathe from the power source!**

2. Locate the extra fixed-shaft gear (shown in Figure below) in your inventory of loose parts.

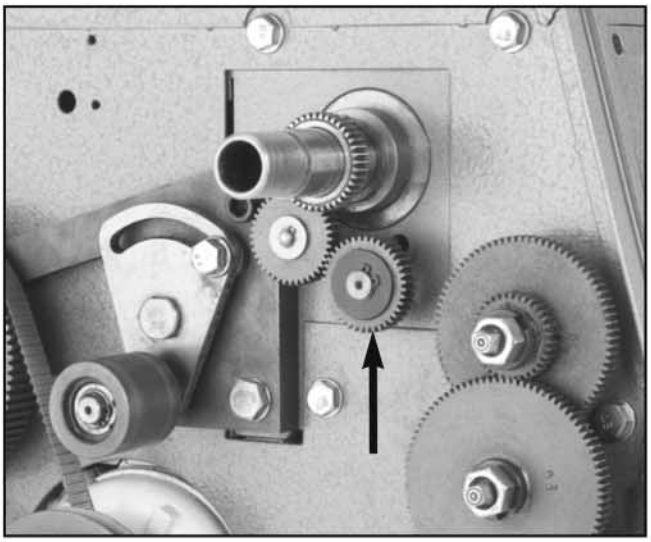
Extra fixed-shaft gear

3. Thread the extra fixed-shaft gear into mounting location “A” as shown below.



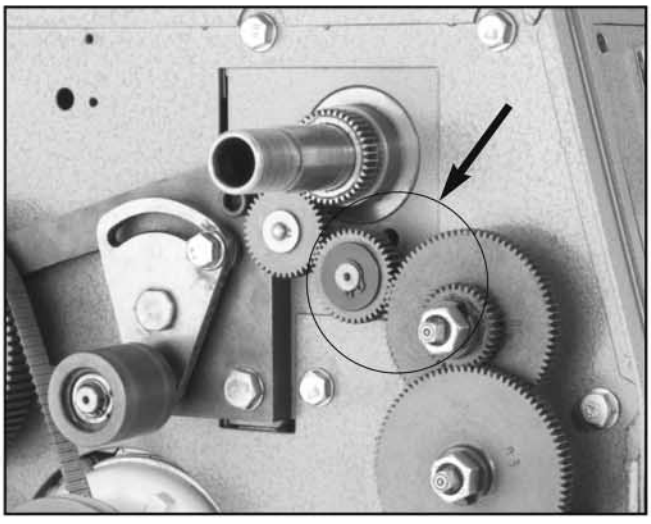
Extra fixed-shaft gear mounted in position “A”

4. When the machine is shipped, a fixed-shaft gear is in position "B". Remove that fixed-shaft gear from mounting location "B" and thread it into mounting location "C" as shown below.



Fixed-shaft gear mounted in position "C"

5. Loosen the cap screw on the gear bracket, and pivot the bracket so the top gear meshes with the fixed-shaft gear that is in position "B," as shown below.



All gears in mesh for reverse threading operations

6. Tighten the cap screw in the gear bracket to keep it from pivoting.

7. Spin the lathe chuck by hand to ensure that the gears do not bind.

8. Replace the cover and test run the machine before proceeding with your specific operation.

LATHE MAINTENANCE

Lubrication

Your C6B bench lathe is a precision tool. In order to maintain this precision and prolong its useful life, it is advised that you follow the recommended daily and periodic maintenance tables printed below.

For lubricating your machine, we recommend that you use a manual oiler (oil can) filled with ISO 68 or SAE 20W non-detergent oil or similar lubricant.

Ball fittings—Shown to the right, ball fittings are responsible for the majority of the machine lubrication. To lubricate ball fittings, depress the ball with the tip of the oil can nozzle and squirt a little oil inside the fitting. Make sure to clean the outside of the ball fitting before and after each use to keep out contaminants.

Lubrication ball fittings

Daily and Periodic Maintenance

Daily Pre-use

1. Using an oil can with a narrow nozzle, oil all the oil points on the machine, incl.
A) Saddle (4), B) tailstock (2), C) traverse slide (1), D) compound slide (2), E) leadscrew gearbox (2), and F) leadscrew end bearing (1).
2. Move the traverse and compound slides to give access to their drive shaft threads and lightly coat with oil, work the oil up the threads to lubricate the thread followers.
3. Spray-oil the slides and the lathe bed, exercise the saddle and the slides to spread the oil to all surfaces, both hidden and visible.
4. Spray up under the rack cover to lubricate the rack. (G)
5. Apply oil to the change gears and their axle mountings. (H)

Daily after-use

1. Clean all swarf and chips away from the machine bed, slide surfaces, and the tool post.
2. Exercise the slides and ensure no swarf etc., is lodged in the drive shaft tunnels.
3. If you have been using ‘suds’ make sure the machine is thoroughly dried off. Clear the suds tray of all swarf and chips, especially around the drain.
4. Check the tool, ensure it is usable the next time, if not re-sharpen or replace the tool tip.
5. Lightly oil spray all the machine beds and surfaces, and the tailstock barrel.
6. Clean and lightly oil any tools you may have been using (centres, drill chucks, spanners chuck keys etc, and put them away.
7. Switch off the power supply. Disconnect the plug.
8. Cover the machine over with a dust cloth.

Weekly

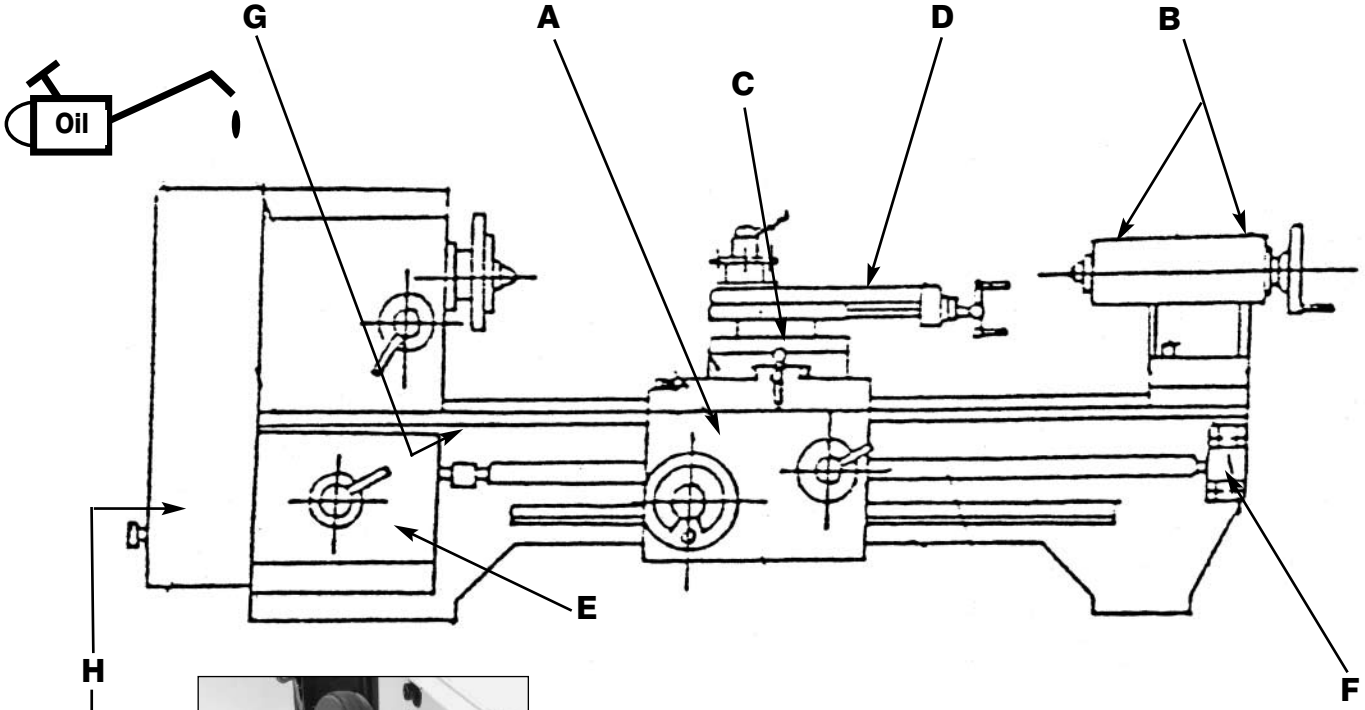
a) Check the belt tension.
b) Check the tautness of the slides.
c) Check the level of the suds reservoir. (if you are using suds).

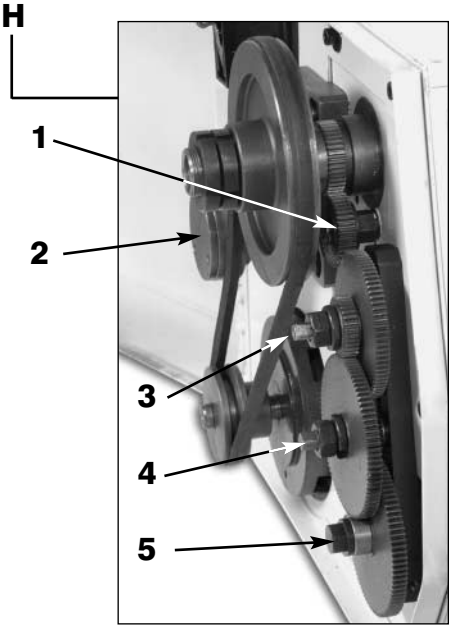
Accessories
May we recommend the following products for use with your SC6

Grease - Rocol Saphire 2 (Part number: 810129).
Lubricant - Rocol Slideway lubricant spray (Part Number: 810141).
Cutting Fluid - Rocol Multisol Cutting Fluid (Part Number: 810140).

There are numerous accessories listed for the machine listed in the Axminster catalogue in section 2.

LATHE MAINTENANCE (OIL LUBRICATION POINTS)



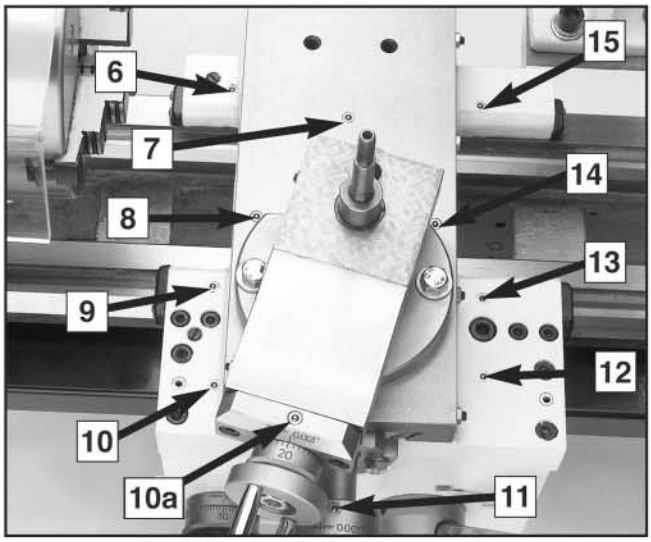


Change Gear

1. Fixed Shaft Gear
2. Synchronised Counter Pulley
3. Upper Adjustable Shaft
4. Lower Adjustable Shaft
5. Pivot Shaft

LATHE MAINTENANCE

6. Bed Guide
7. Cross Slide Leadscrew
8. Bed Guide
9. Bed Guide
10. Apron
10a Compound Slide Leadscrew
11. Cross Slide Leadscrew Support
12. Apron
13. Bed Guide
14. Bed Guide
15. Bed Guide



Ball fitting lubrication points

Gears—Apply a minimal amount of oil to the teeth of the end gears after assembly and each 8 hours of actual use. Avoid getting oil on the belt or pulleys when lubricating. Also, regularly apply lubrication to all the ball fittings drive box.

Long Leadscrew—Apply a minimal amount directly on the rack every 8 hours of actual use.

Carriage Rack—Apply a minimal amount directly on the rack every 8 hours of actual use.

Checking V-Belt

To ensure optimum power transmission from the motor, the V-belts must be in good condition and must operate under proper tension. The belts should be checked for cracks, fraying, and wear at least every 3 months—more often if the machine is used daily.

Check the V-belt:

1. **Unplug the lathe from its power source!**
2. Open the drive cover.
3. Note the condition of the V-belt. If the V-belt is cracked, frayed, or glazed; it should be replaced.

SERVICE ADJUSTMENTS

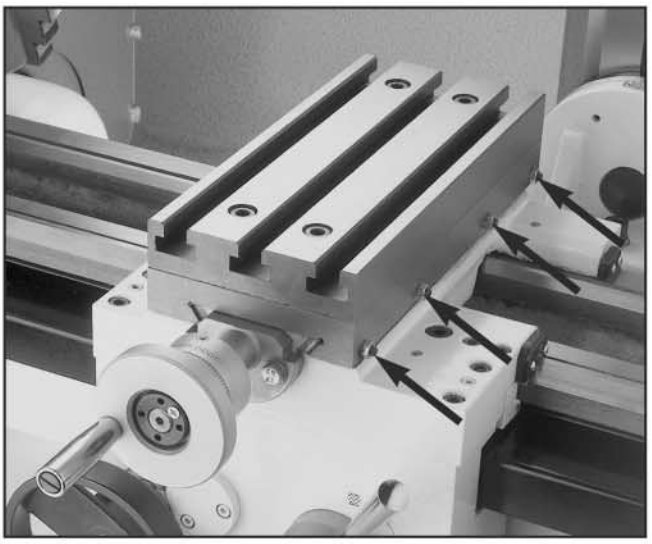
Gibs

There are three gib adjustments for the lathe—the cross-slide gib, the compound slide gib and the apron gib.

NOTICE

When adjusting gibs, keep in mind that the goal of gib adjustment is to remove unnecessary sloppiness without causing the slides to bind. Loose gibs may cause poor finishes on the workpiece and may cause undue wear on the slide. Over-tightening may cause premature wear on the slide, leadscrew and nut.

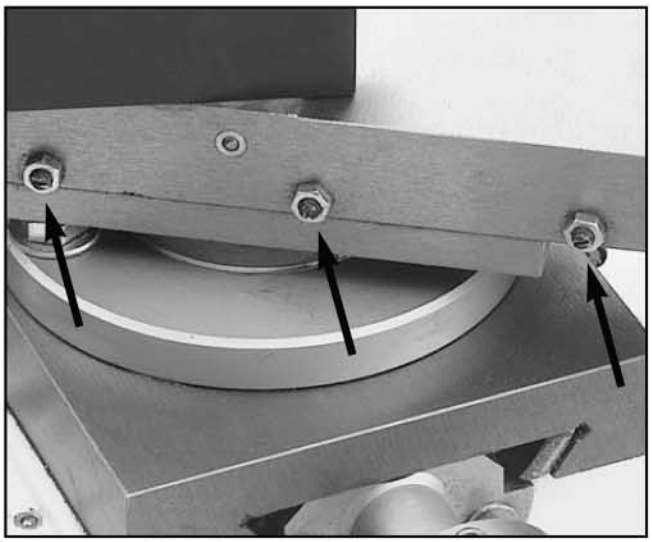
Cross-slide Gib—The gib on the cross-slide is adjusted by tightening or loosening the 4 gib screws located on the right-hand side of the slide. See Figure below. Before adjusting the gib screws, loosen their jam nuts.



Cross slide gib screws

The gib is held in place by the setscrews. *DO NOT overtighten.* The gib is properly adjusted when a slight drag is detected while turning the hand crank. This drag should be evenly distributed among the 4 setscrews, so adjust each screw until a slight drag is detected while the hand crank is turned.

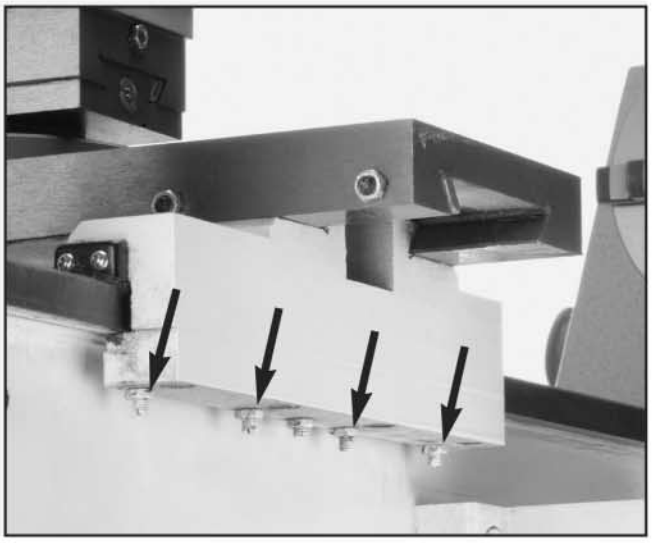
Compound Gib—The gib on the compound has 3 screws that maintain tension on the slide. These screws are held in place with retaining nuts. To adjust, loosen the retaining nuts and then tighten the screws as needed. When proper tension has been detected by turning the hand crank on the compound, tighten the retaining nuts while maintaining the position of the screw with an Allen® wrench as in Figure below.



Compound slide gib screws

Saddle Gibs—There are 4 tensioning screws for both the front and rear saddle gibs. Before making adjustments to the saddle gib, ensure that the front lock lever is loose by turning it counterclockwise. See Figures below. It is important the screws are tightened evenly. A slight drag should be detected while turning the hand crank on the apron.

Front saddle gib screws



Rear saddle gib screws

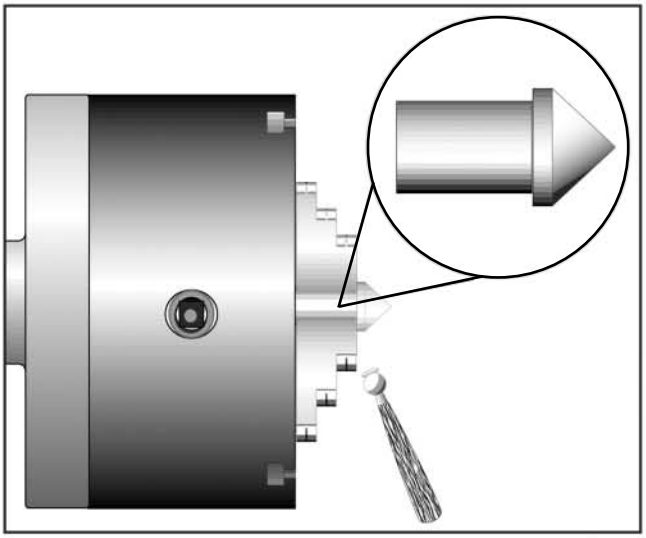
Aligning Tailstock

The tailstock on the Lathe is aligned with the headstock at the factory. However, at times you may wish to misalign the tailstock for certain operations; then, realign it when you are finished.

To align the tailstock:

1. Centre drill a 150mm long piece of round cold rolled stock on both ends. Set it aside for use in **step 4.**

2. Make a dead centre by turning a shoulder to make a shank, then flip the piece over in the chuck and turn a 60° point. See Figure below. *Note—As long as it remains in the chuck, the point of your* centre *will be accurate to your spindle axis. Keep in mind that the point will have to be refinished whenever it is removed and returned to the chuck.*

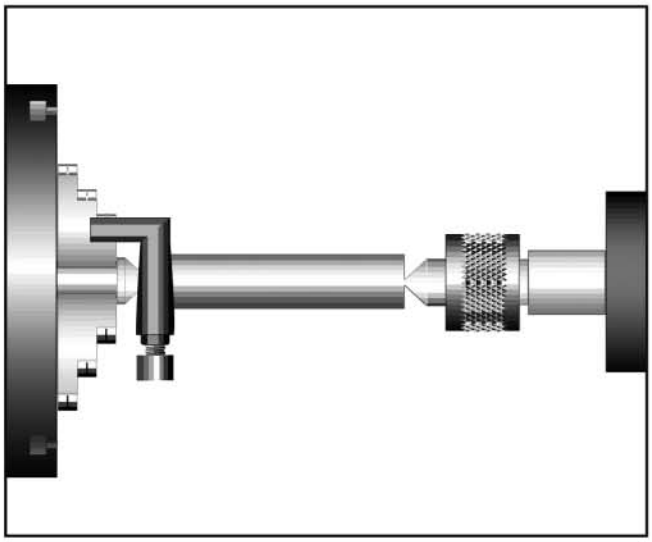


Finished dead centre

3. Place a center in your tailstock.

4. Attach a lathe dog to the bar stock and mount it between the centres. See Figure below.

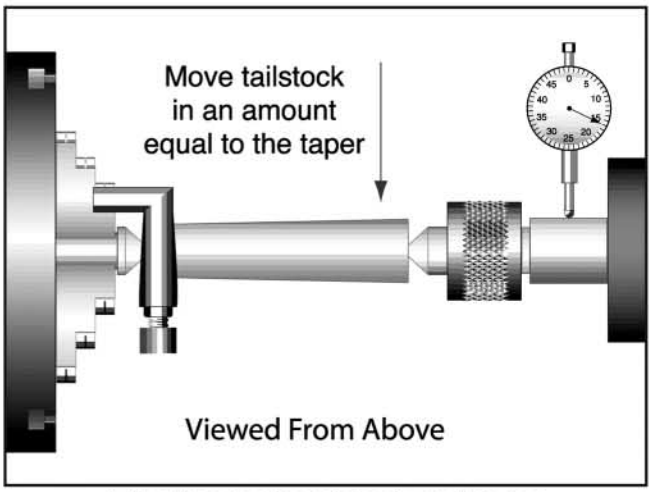
5. Turn approximately 0.25mm off of the diameter.



Bar stock mounted on centre

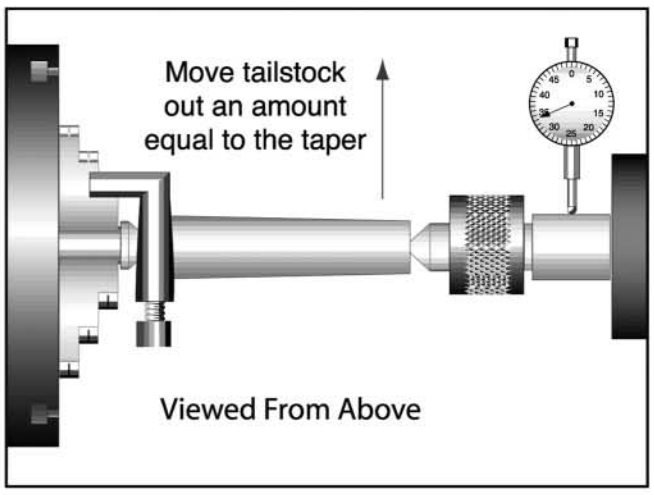
NOTICE

Before making adjustments to the tailstock, mount a dial indictor so that the dial plunger is on the tailstock barrel. See Figure below.



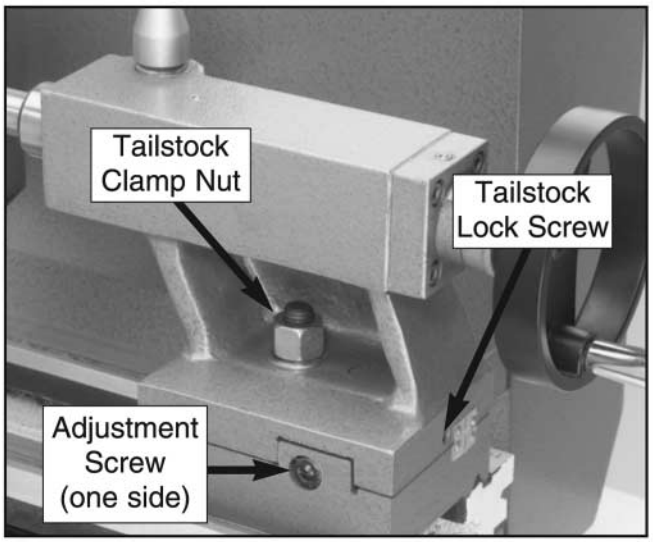
Adjusting for headstock end taper

6. Measure the workpiece with a micrometer. If the stock is fat at the tailstock end, the tailstock needs to be moved toward you the amount of the taper. See **Figure above.** If the stock is thinner at the tailstock end, the tailstock needs to be moved away from the operator by at least the amount of the taper. **See Figure below.**



Adjusting for tailstock end taper

7. Loosen the tailstock clamp nut and the lock screw shown in Figure below.



Tailstock offset adjustment screw

8. Use the tailstock adjustment screws on both sides to adjust move the tailstock offset by the amount of the taper.

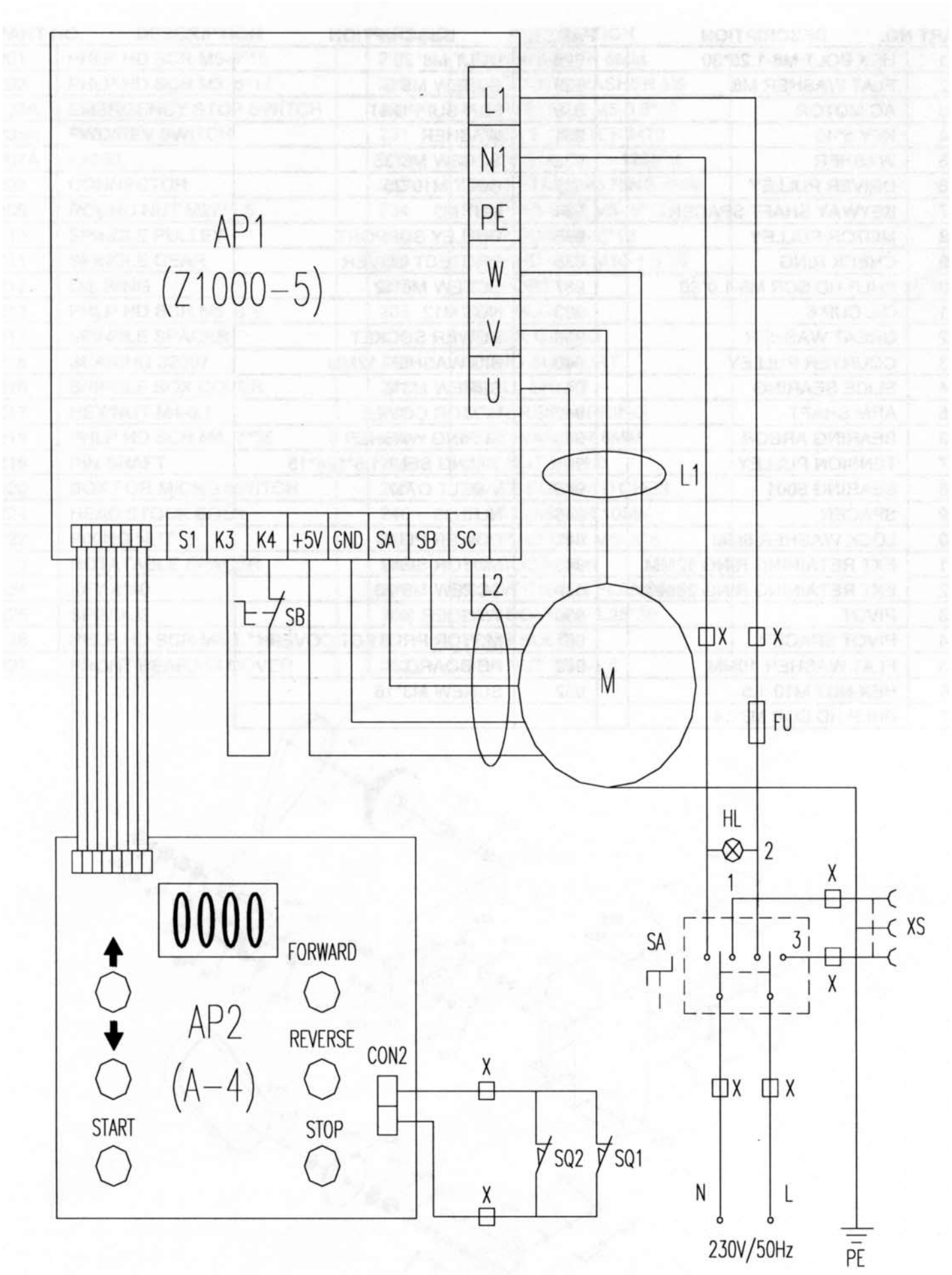
9. Tighten the clamp nut, lock screw and adjustment screws. Be careful not to move the tailstock out of position when tightening the adjustment screws.

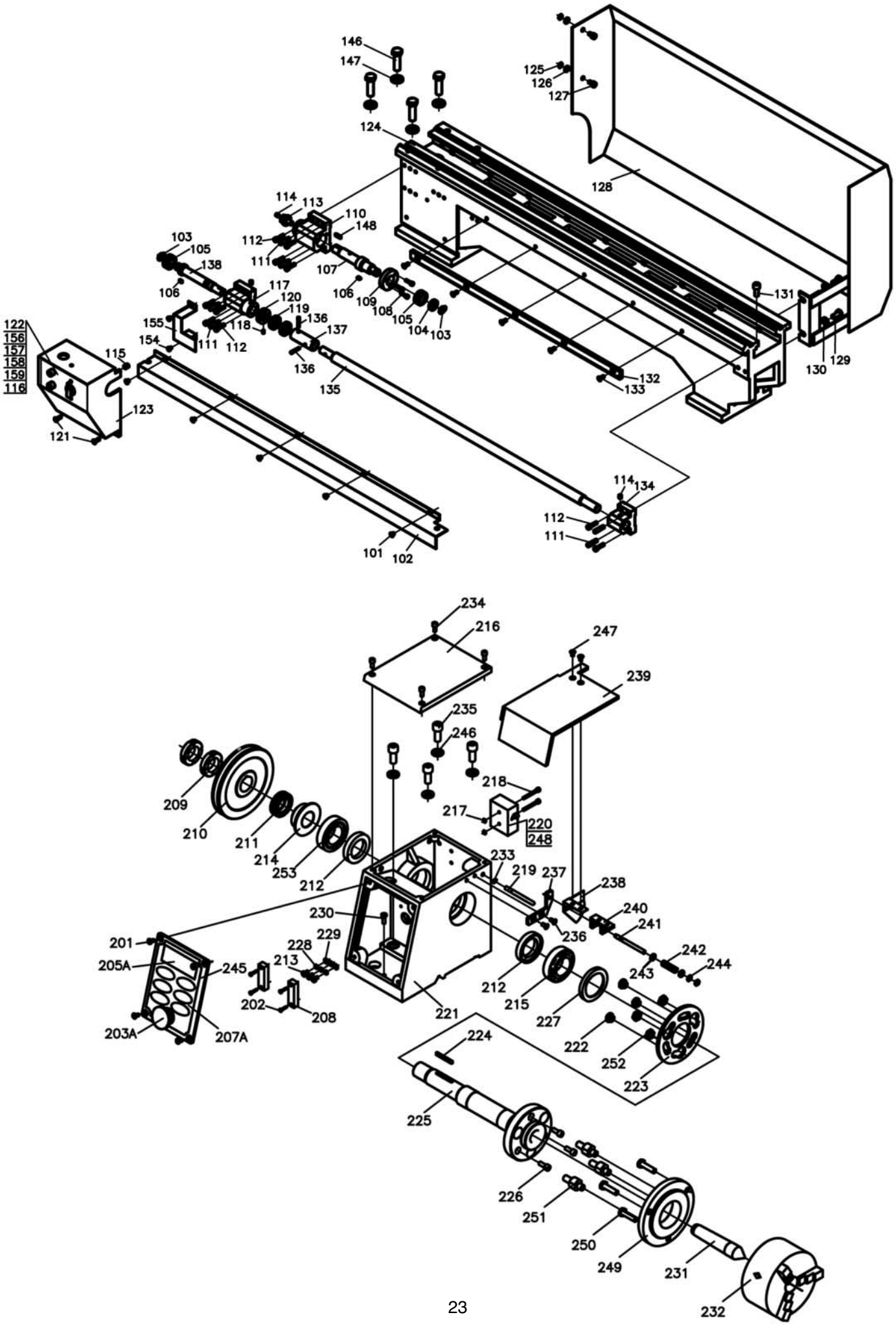
10. Turn another 0.25mm off of the stock and check for taper. Repeat **steps 7-9** as necessary until the desired amount of accuracy is achieved.

Bearing Preload

This lathe is shipped from the factory with the bearing preload already set. If the preload requires resetting for whatever reason, please contact our service department for further instructions.

SC6 WIRE DIAGRAM

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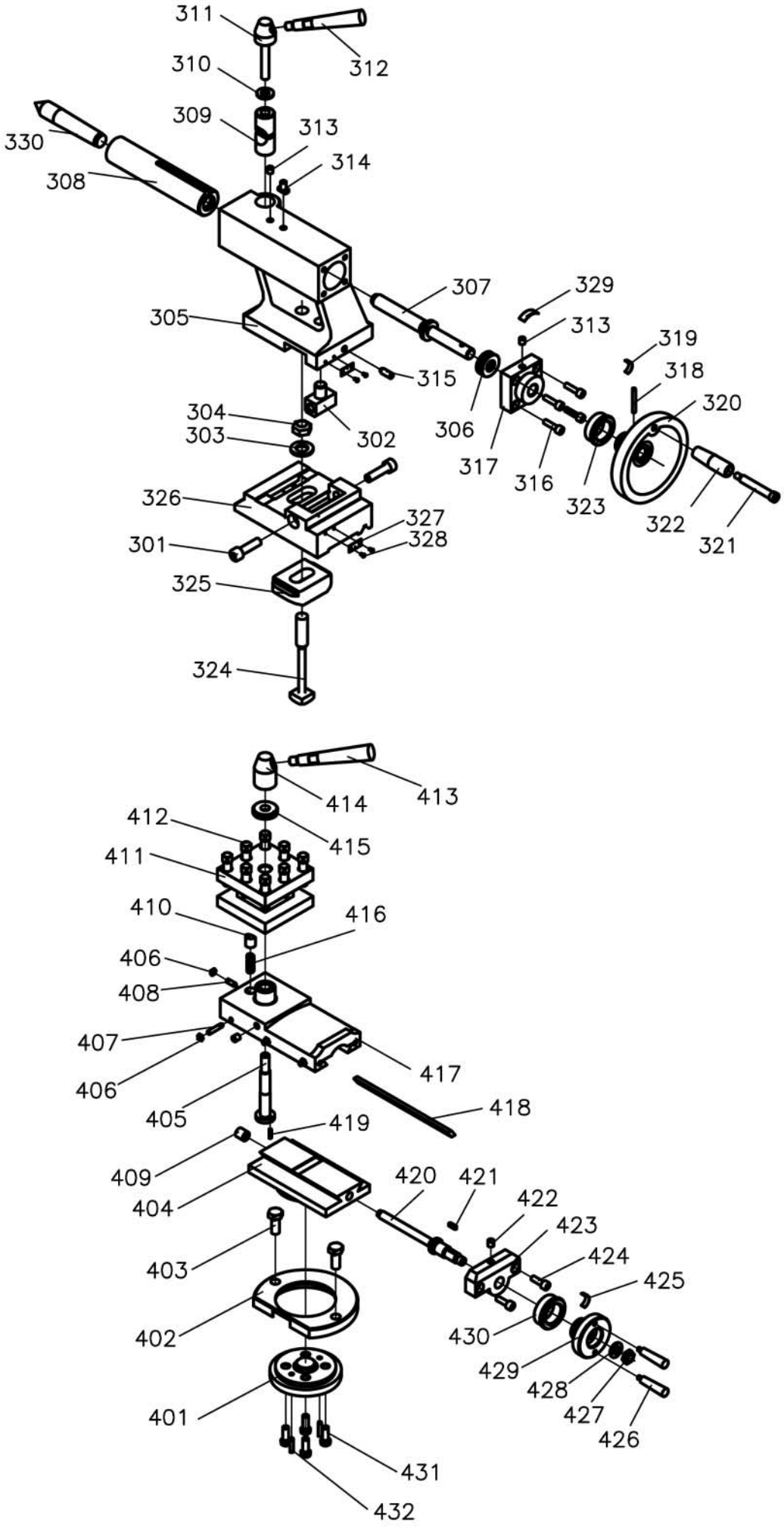
No.	Description	Q'ty	No.	Description	Q'ty
101	Screw M5×6	5	208	Electric connector	2
102	Protecting Cover of leadscrew	1	209	Round nut M27×1.5	2
103	Check Ring 14	2	210	Spindle pulley	1
104	Washer	1	211	Spindle gear	1
105	Small gear	2	212	Oil ring	2
106	Key 4x8	2	213	Screw M5×8	3
107	Change gear shaft	1	214	Spacer	1
108	Screw M4×16	3	215	Bearing 32007	1
109	Adjusting disc	1	216	Spindle box cover	1
110	Shaft support	1	217	Nut M4	2
111	Taper pin 6×26	6	218	Screw M4×35	2
112	Screw M5×20	10	219	Pin shaft	1
113	Bolt (with shoulder)	1	220	Box for micro swich	1
114	Oil cup	3	221	Head stock body	1
115	Block for switch	1	222	Fixing nut	3
116	Screw M4×8	2	223	Rotate spacer	1
117	Leadscrew support(left)	1	224	Key 4×40	1
118	Screw M4×8	1	225	Spindle	1
119	Round nut	2	226	Screw M6×16	3
120	Steel washer	1	227	Front bearing cover	1
121	Screw M5×14	2	228	Spring washer 5	3
122	Switch label	1	229	Teeth washer 5	3
123	Shaft protecting cover	1	230	Screw M5×16	1
124	Bed	1	231	Spindle center	1
125	Nut M6	2	232	3-jaw chuck D=125	1
126	Washer 6	2	233	Check ring 6	1
127	Bolt M6×10	2	234	Screw M5×12	4
128	Splash guard	1	235	Screw M10×25	4
129	Screw M8×15	2	236	Screw M5×10	2
130	Washer 8	2	237	Support	1
131	Screw M8×20	1	238	Limit block of dust brack	1
132	Gear	1	239	Chuck guard	1
133	Screw M5×12	5	240	Fixing support	1
134	leadscrew support(right)	1	241	Small shaft	1
135	Long leadscrew	1	242	Compress spring	1
136	Pin 4×24	2	243	Washer 6	2
137	Joint sleeve of Leadscrew	1	244	Nut M6	2
138	Joint shaft of Leadscrew	1	245	Plate for switchs	1
146	Bolt M12×40	3	246	Washer 10	4
147	Washer 12	3	247	Screw M5×8	2
148	Key 4x16	1	248	Micro switch	1
154	Screw M4×6	2	249	3-jaw chuck flange	1
155	Protector for small gear	1	250	Bolt M8×30	3
156	Green lamp	1	251	Plug bolt	3
157	Fuse box	1	252	Nut M10	3
158	Fuse box	1	253	Bearing	1
159	Switch	1	301	Screw M8×30	2
201	Screw M5×10	4	302	Nut	1
202	Screw M3×14	4	303	Washer 12	1
203A	Emergency switch	1	304	Nut M12	1
205A	Digital display	1	305	Tailstock body	1
207A	Label	1	306	Bearing 51101	1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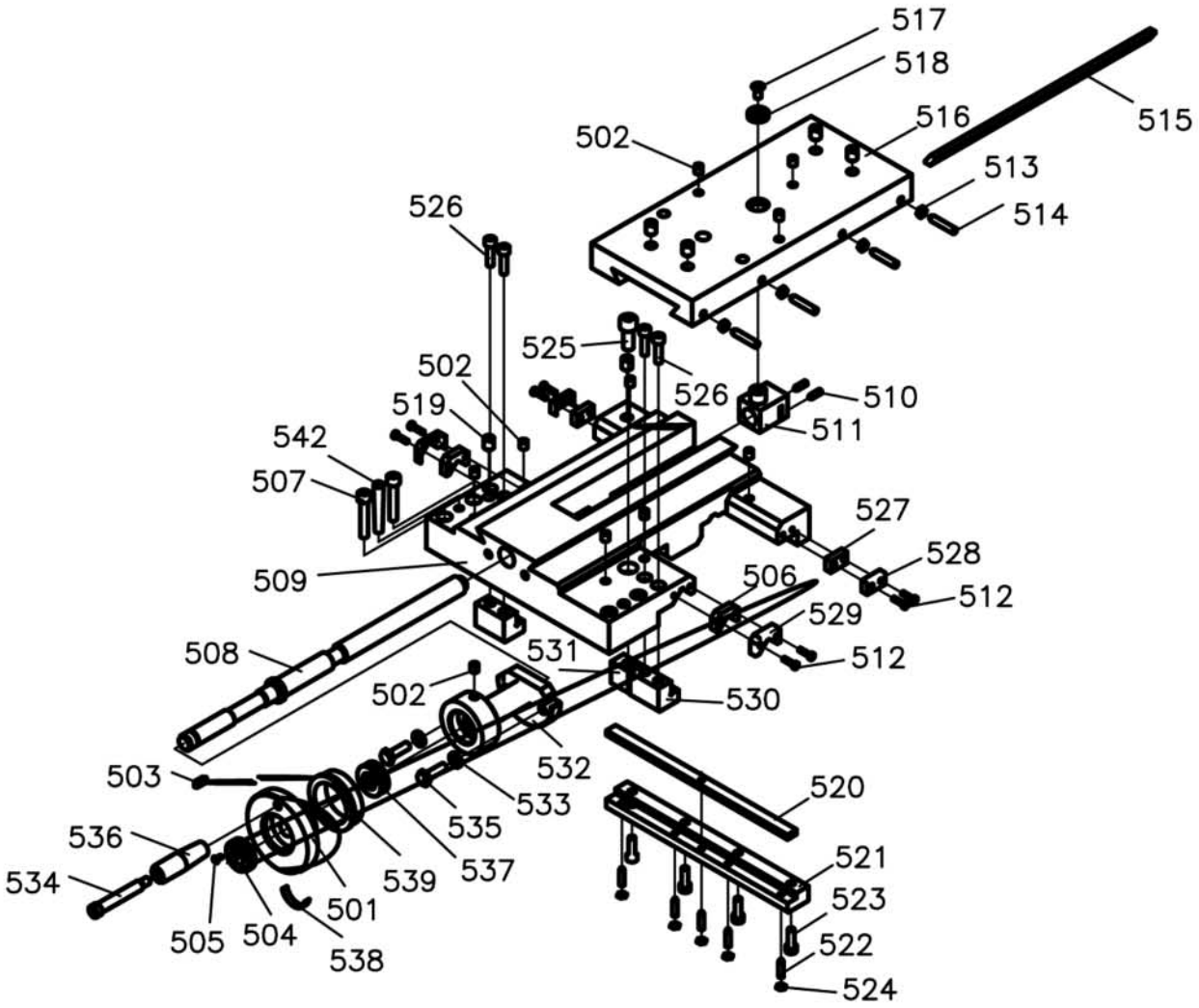
No.	Description	Q'ty	No.	Description	Q'ty
307	Tailstock leadscrew	1	430	Index ring	1
308	Tailstock sleeve	1	431	Screw M6×16	4
309	Tubular clamp	1	432	Cylinder pin 4×16	2
310	Washer	1	501	Handle	1
311	Clamp bolt	1	502	Oil cup 6	10
312	Handle	1	503	Key 4×12	1
313	Oil cup	2	504	Nut	1
314	T-Tapy flat key	1	505	Screw M3×6	1
315	Screw M6×16	1	506	Oil-stoping felt	2
316	Screw M5×20	4	507	Screw M6×35	4
317	Tailstock end cover	1	508	Saddle leadscrew	1
318	Cylinder pin 4×30	1	509	Saddle	1
319	Spring bow	1	510	Screw M4×12	2
320	Handle	1	511	Nut	1
321	Handle bolt	1	512	Screw M3×12	8
322	Handle sleeve	1	513	Nut M5	4
323	Index ring	1	514	Screw M5×25	4
324	Square head bolt M12×100	1	515	Wedge	1
325	Tailstock clamp plate	1	516	Cross slide	1
326	Base	1	517	Screw M5×10	1
327	Zero position label	2	518	Washer	1
328	Label rivet 2×4	4	519	Screw M8×10	6
329	Indicate laabel	1	520	Rear-clamp plate gib strip	1
330	Tailstock center	1	521	Saddle rear-clamp plate	1
401	Cutter rest revolving dish set	1	522	Screw M4×16	5
402	Clamp disc	1	523	Screw M5×16	4
403	Bolt M8×20	2	524	Nut M4	5
404	Cutter rest revolving dish	1	525	Screw M8×20	1
405	Cutter rest bold	1	526	Screw M5×20	4
406	Nut M4	4	527	Oil-stoping felt	2
407	Screw M4×20	3	528	Protecting panel	2
408	Screw M4×12	1	529	Protecting panel	2
409	Oil cup 10	1	530	Saddle frong-clamp plate	2
410	Fixing pin	1	531	Braking plate	1
411	Square cutter rest	1	532	Leadscrew support	1
412	Screw M8×30	8	533	Washer 6	2
413	Handle	1	534	Handle bolt	1
414	Handle base	1	535	Bolt M6×20	2
415	Washer	1	536	Handle sleeve	1
416	Spring 0.5×3.5×17	1	537	Bearing 8101	1
417	Cutter rest carriage	1	538	Spring plate	1
418	Wedge	1	539	Index ring	1
419	Cylinder pin 3×10	1	540	Work table	1
420	Cutter rest carriage leadscrew	1	601	Handle	1
421	Key 3×10	1	602	Screw M6×8	1
422	Oil cup 6	2	603	Compress spring	1
423	Leadscrew support	1	604	Steel ball Φ5	1
424	Screw M5×16	2	605	Handle seat	1
425	Spring plate	1	606	Screw M6×16	1
426	Handle	2	607	Screw M4×10	6
427	Nut M8	1	608	Flange shaft sleeve	1
428	Washer 8	1	609	Apron body	1
429	Cutter rest carriage handle	1	610	Handle bolt	1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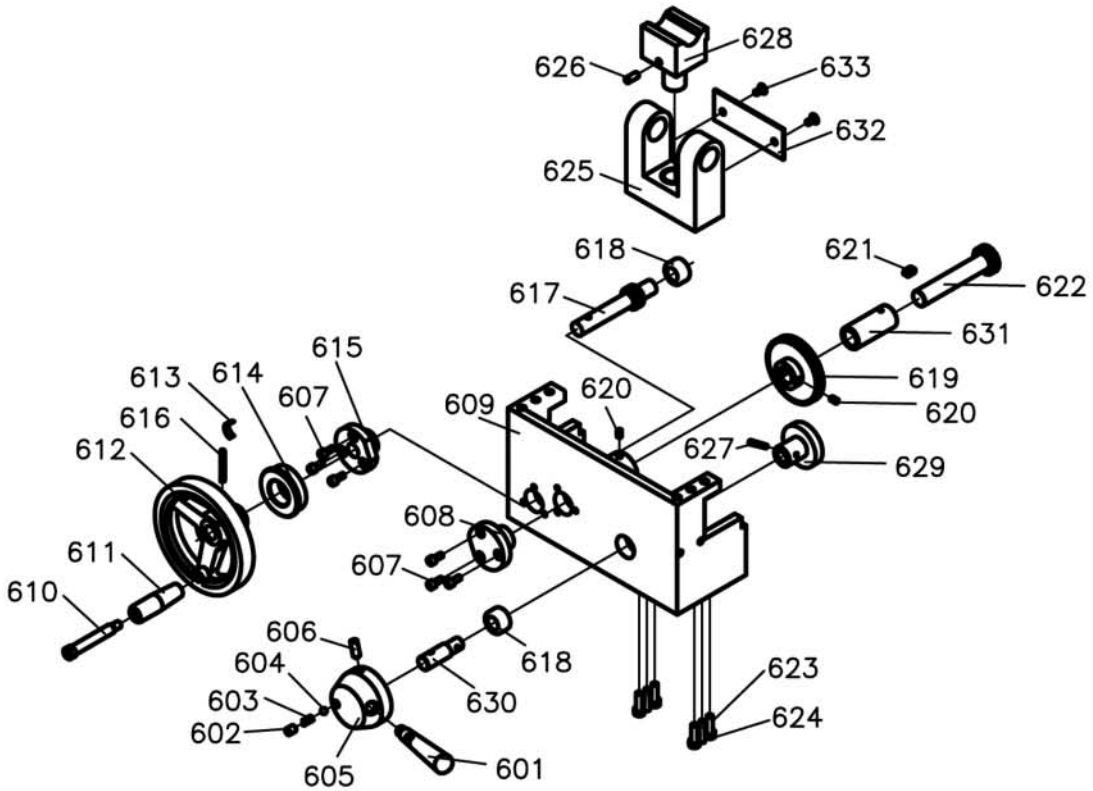
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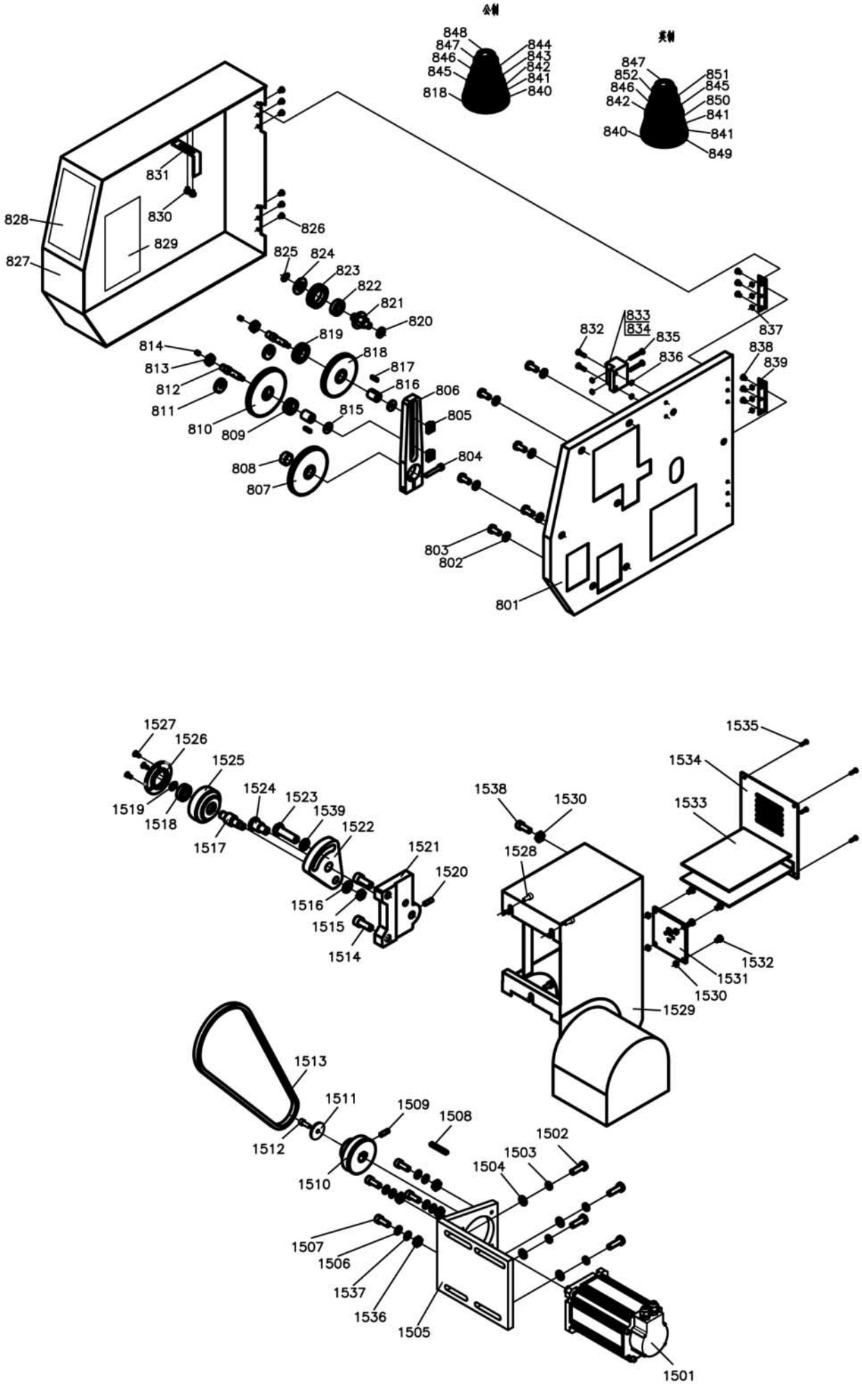
No.	Description	Q'ty	No.	Description	Q'ty
611	Handle sleeve	1	829	Changing gear label	1
612	Handle	1	830	Screw M5×6	2
613	Spring plate	1	831	Moving and limit wedge	1
614	Index ring	1	832	Screw M4×16	2
615	Small flange shaft sleeve	1	833	Protecting box for micro switch	1
616	Spring pin 4×30	1	834	Micro switch	1
617	Small gear shaft	1	835	Screw M4×30	2
618	Shaft sleeve	2	836	Nut M4	4
619	Gear	1	837	Nut M4	6
620	Screw M4×8	2	838	Screw M4×6	6
621	Key 5×10	1	839	Cover 62*33*1	2
622	Gear shaft	1	Gear box(M)		
623	Screw M5×16	4	840	Gear Z:75	1
624	Pin 4×22	2	841	Gear Z:70	1
625	Nut set	1	842	Gear Z:66	1
626	Pin 5×12	1	843	Gear Z:52	1
627	Pin 3×20	1	844	Gear Z:42	1
628	Nut	1	818	Gear Z:80	1
629	Slotted disc	1	845	Gear Z:60	1
630	Rotating shaft	1	846	Gear Z:50	1
631	Shaft sleeve	1	847	Gear Z:40	1
632	Moving plate	1	848	Gear Z:30	1
633	Screw M4×8	2	Gear box (I)		
801	Gear box support plate	1	840	Gear Z:75	1
802	Washer 8	6	841	Gear Z:70	2
803	Bolt M8×16	6	842	Gear Z:66	1
804	Screw M6×35	1	845	Gear Z:60	1
805	Square nut	2	846	Gear Z:50	1
806	Gear rest	1	847	Gear Z:40	1
807	Geare Z:90 (M)	1	849	Gear Z:72	1
	Gear Z:100 (I)	1	850	Gear Z:68	1
808	Washer	1	851	Gear Z:48	1
809	Gear Z:25	1	852	Gear Z:45	1
810	Gear Z:90	1	1501	Motor 1000W	1
811	Open washer	2	1502	Screw M8×30	4
812	Bolt	2	1503	Spring washer 8	4
813	Nut M12	2	1504	Washer 8	4
814	Oil cup 6	2	1505	Motor connector	1
815	Washer	2	1506	Washer 6	4
816	Beareing	2	1507	Screw M6×30	4
817	Key 4×16	2	1508	Key 5×25	1
818	Gear Z:80	1	1509	Screw M5x12	1
819	Gear Z:33	1	1510	Motor pully	1
820	Washer	1	1511	Check ring	1
821	Fixed bolt	1	1512	Screw M6×30	1
822	Bearing 6001	1	1513	V belt	1
823	Gear Z:40	1	1514	Screw M10x25	2
824	Washer	1	1515	Nut M10	1
825	Check ring 12	1	1516	Check ring 12	1
826	Screw M4x8	6	1517	Support shaft	1
827	Gear box cover	1	1518	Bearing	1
828	Main label	1	1519	Check ring 12	1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No.	Description	Q'ty
1520	Screw M6x16	1
1521	Support	1
1522	Support	1
1523	bolt M10x30	1
1524	fixed shaft	1
1525	Compress wheel	1
1526	Bearing cover	1
1527	Screw M4x12	3
1528	Screw M6×12	3
1529	Electric protector	1
1530	Nut M5	5
1531	Plug	1
1532	Screw M5×8	4
1533	PC board	1
1534	Seal board	1
1535	Screw M4×8	4
1536	Nut M6	4
1537	Spring washer 6	4
1538	Screw M5×12	1
1539	Washer 10	1

AXMINSTER®
TOOL CENTRE

SIEG SC6 Mill Attachment

SIEG®

DECLARATION OF CONFORMITY

The undersigned, Galen Chen authorised
by Shanghai SIEG Machinery Co., Ltd.
No.555 Caofeng Rd., South to No. 17 Bridge of Caoan Rd.,
Shanghai. P.R.China

declares that this product:

SX2

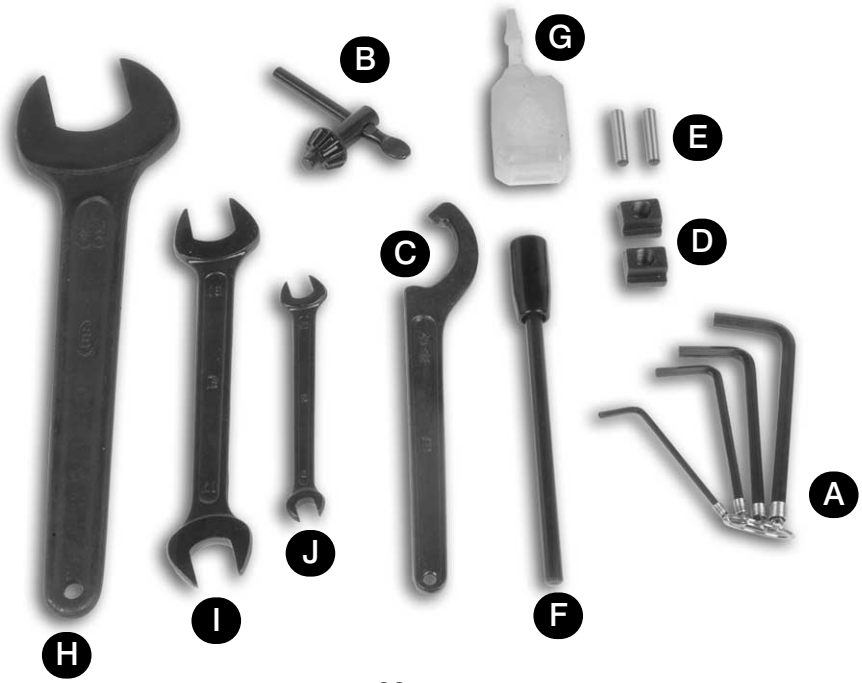
manufactured by Shanghai SIEG Machinery Co. is in compliance with the following standards or standardisation documents in accordance with Council Directives

EN13128: 2001+A1: 2006 + A2: 2009/AC: 2010
EN61029-1: 2009+A11: 2010

Machinery Directive 2006/42/EC

WHAT'S IN THE BOX

Quantity	Item			Model Number
1 No.	Mill with Chuck and M12 Draw Bar fitted			SX2
Box containing:-				
1 No.	Set of Allen Keys	(A)	1 No.	Mill Support Casting
1 No.	Chuck Key	(B)	1 No.	Tilt Housing Casting
1 No.	'C' Spanner	(C)	1 No.	36mm Nut
2 No.	'T' Slot Keepers	(D)	3 No.	M8x30 Caphead bolts
2 No.	Steel Pins	(E)		and washers
1 No.	Tommy Bar	(F)	4 No.	M8x35 Caphead bolts
1 No.	Oiling Bottle	(G)		and washers
1 No.	36mm Spanner	(H)	1 No.	Mill/Drill Table
1 No.	19mm Spanner	(I)	1 No.	M10 Drawbar
1 No.	10mm Spanner	(J)	1 No.	3/8" Drawbar



Please read the Instruction Manual prior to using your new machine; as well as the installation procedure, there are daily and periodic maintenance recommendations to help you keep your machine on top line and prolong its life. Keep this Instruction Manual readily accessible for any others who may also be required to use the machine.

Having unpacked your machine and its accessories, please check the contents against the equipment list "What's in the box", if there are any discrepancies, please contact Axminster Tool Centre using the procedures laid down in the catalogue. Please dispose of the packaging responsibly, much of the material is bio-degradable. The machine and its accessories will arrive coated with heavy corrosion preventative grease. This will need to be cleaned from the machine, its components and accessories prior to it being set up and commissioned. Use coal oil, paraffin or a proprietary degreaser to remove the barrier grease. Be warned, it will stain if you splash it on clothing etc., wear overalls, coverall et al., rubber gloves are also a good idea, as is eye protection if your cleaning process tends to be a little bit enthusiastic. After cleaning, lightly coat the exposed metal surfaces of the machine with a thin layer of light machine oil. N.B If you used paraffin/kerosene make sure you apply this thin film sooner rather than later.

SPECIFICATIONS

Code	**951542**
Motor	**230V a.c. 50 Hz. 220V d.c. 350W**
Quill Travel	**30mm**
Spindle Speeds	**Low Gear 0-1100rpm (variable) High Gear 0-2500 rpm (variable)**
Spindle Taper	**No. 3 MT**
Draw Bar Threads	**M10,3/8"**
Drilling Capacity	**13mm**
End Mill Capacity	**16mm**
Face Mill Capacity	**30mm**
Weight	**35kg**

DEFINITIONS

'X' Axis. This is the axis described by the work table as it is moved side to side. Normally, movement that moves the tool to the right in the workpiece is referred to as +ve 'X', and movement that moves the tool to the left in the workpiece is referred to as –ve 'X'. Where the initial position of the tooling and the worktable is designated 0,0. (Horizontal plane only).

'Y' Axis. This is the axis described by the work table as it is moved from front to back. (Traverse) Normally movement that moves the tool to the front in the workpiece is referred to as-ve 'Y', and movement that moves the tool to the rear in the workpiece is referred to as+ve 'Y'. Where the initial position of the tooling and the worktable is designated 0,0.(Horizontal plane only).

'Z' Axis This is the axis described by the worktable in the vertical plane. (Not possible with this machine). However, to establish a point in space, the co-ordinates can be transferred to the 'tip' of the tooling, whereby, if we assume that the tool and the worktable in their initial positions, where designated 0,0,0, (Horizontal and vertical planes) any point above the tool tip is referred to as +ve 'Z', and any point below the tool tip is referred to as -ve 'Z'

INITIAL ASSEMBLY - REMOVING THE SPLASH GUARD

DISCONNECT THE LATHE FROM THE MAINS SUPPLY

1) Remove the four Phillip screws and pull out the electrical back plate to the rear of the lathe and lay the circuit board to one side. (See fig 1 & 2)

(NOTE. Be careful when lifting out the electrical circuit board as it contains delicate components)

2) Locate a 5mm allen key and 10mm spanner, remove the two caphead bolts and nuts that secures one side of the splash guard to the headstock. (See fig 3 & 4)

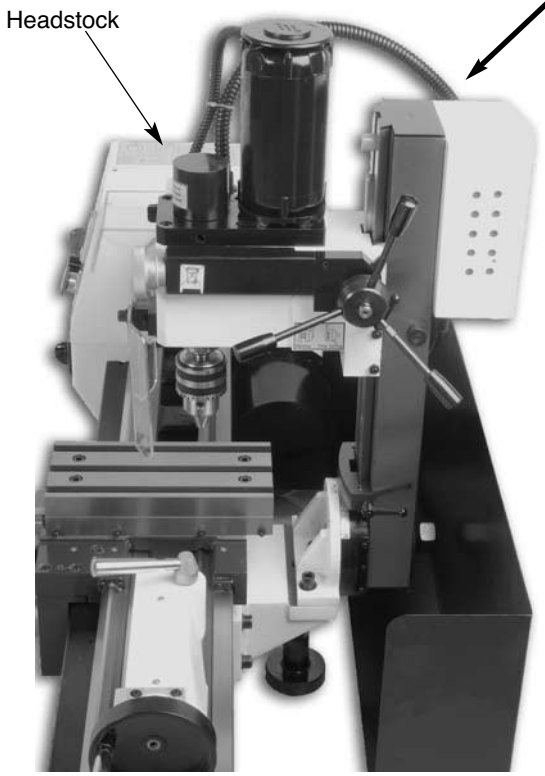
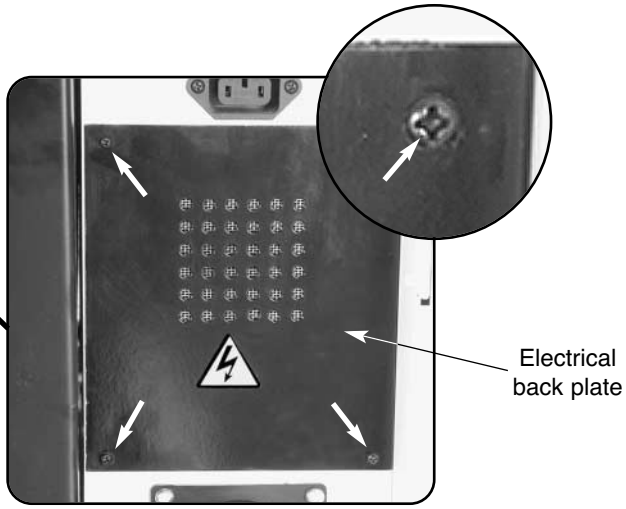


Fig 1



Remove the four Phillip screws and lift out the electrical panel

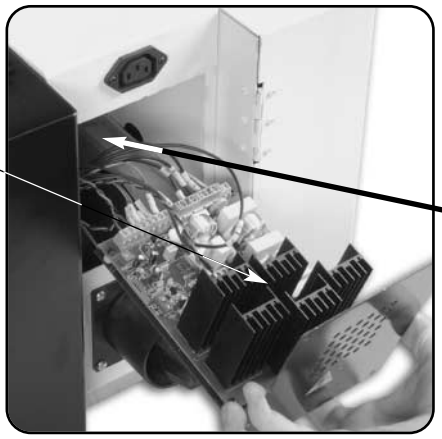


Fig 2

Fig 3

Fig 4

Remove the two caphead bolts and nuts that secures one side of the splash guard to the headstock

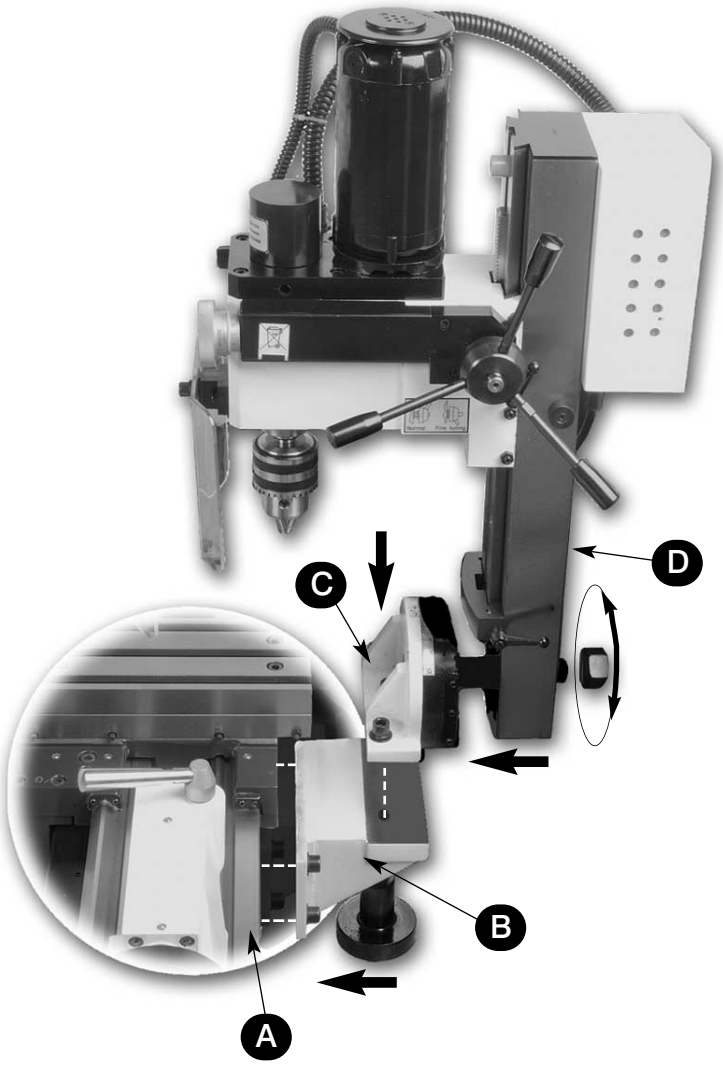
3) Loosen the two bolts and washers which clamps the opposite end of the splash guard to the side of the lathe bed, below the tailstock. (See fig 5)

4) Remove the splash guard and place safely aside.

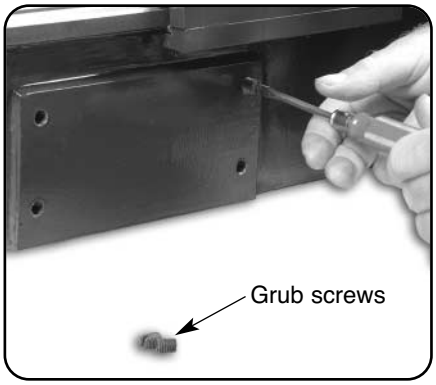
INITIAL ASSEMBLY - MOUNTING THE MILL

WARNING

When mounting the Mill to the Lathe, we strongly advise you get the assistance of another person because of the weight of the machine.

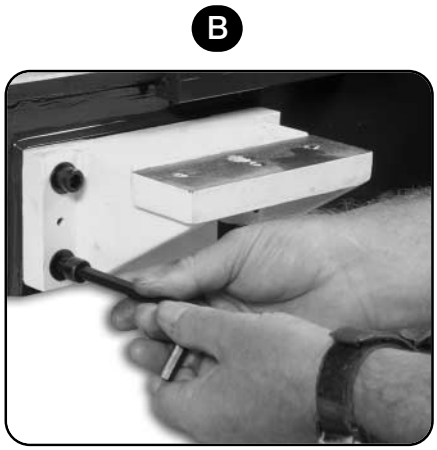


Step 1



Remove the four grub screws to the side of the lathe bed and place safely aside.

Step 2

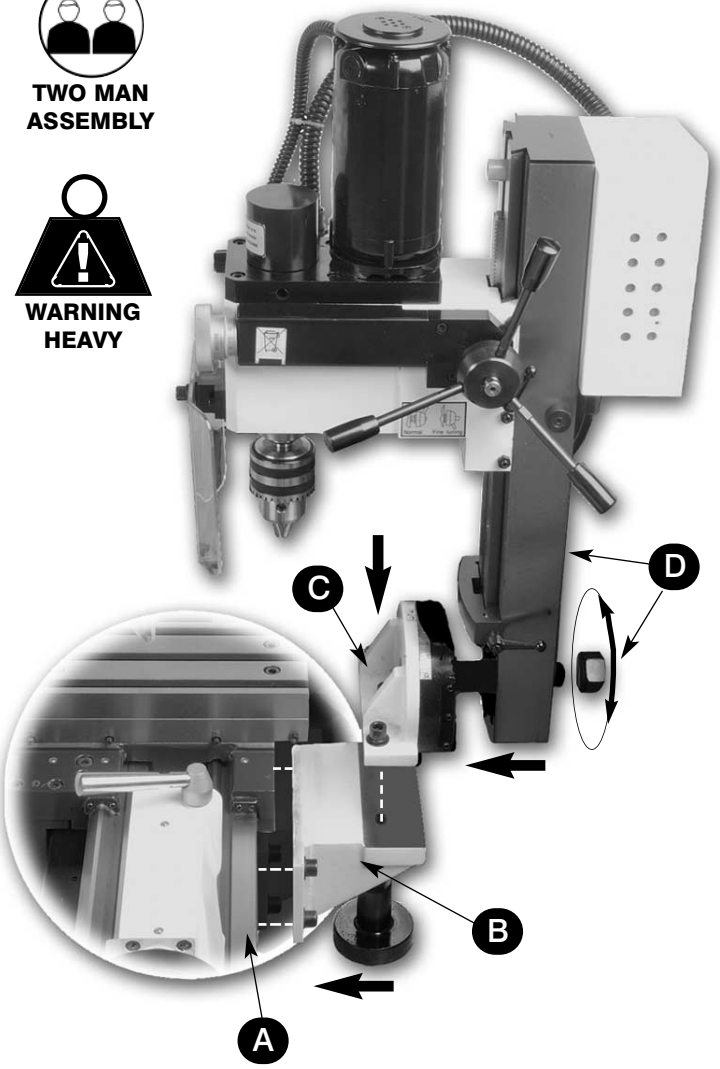


Locate the angle support casting and four M8x35 caphead bolts and washers. Secure the angle support to the side of the lathe bed. **DO NOT OVERTIGHTEN**

INITIAL ASSEMBLY - FITTING THE MILL

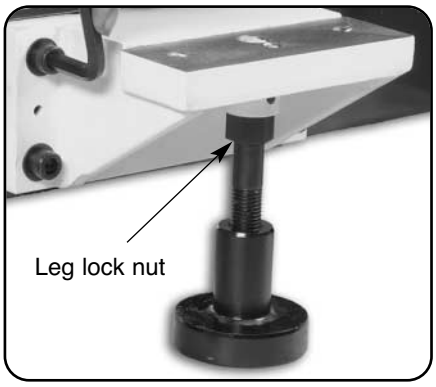
TWO MAN ASSEMBLY

WARNING HEAVY



Step 3

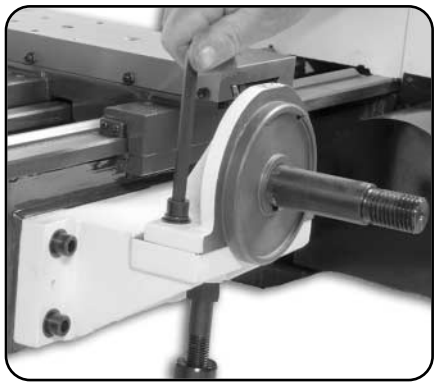
B



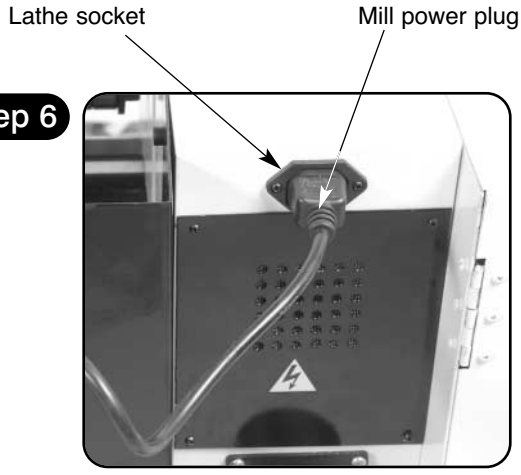
Tip the lathe forward and have your assistant thread the support leg up into the angle support casting. Adjust the support leg until it makes contact with the surface of your bench or stand, tighten the lock nut to lock the leg in position.

Step 4

C



Locate the tilt housing casting and three M8x30 caphead bolts and washers. Offer up the pre-drilled holes with the holes in the support casting and secure in place using the M8 bolts and washers.

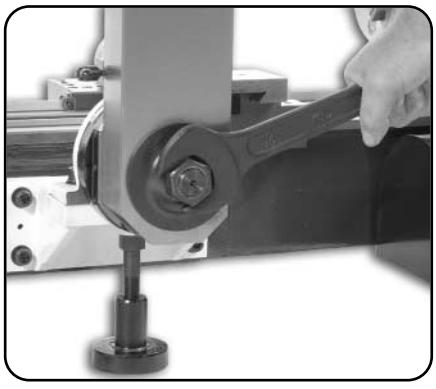


Step 6

Insert the Mill's power plug into the socket in the rear of the lathe as shown.

Step 5

D



Lift the mill assembly and slide it over the tilt housing shaft until it is flush against the tilt housing. Locate the 36mm nut and spanner and lock the mill assembly in position.
DO NOT OVER TIGHTEN

Make sure that everything is secure then replace the splash guard as described on pages 34-35.

Please read the section entitled Identification and Parts description so that you may more easily identify the parts to which reference is made in the text.

Testing

When the Mill is mounted to your satisfaction, proceed as follows:-

a) Close the chuck jaws

b) Check the millhead is 'locked' in position on the column.

c) Check that all loose items are removed from the worktable.

d) Set the worktable approximately mid-positioned under the chuck jaws.

e) Check the speed control is switched OFF (fully anti-clockwise).

f) Rotate the Lathe/Mill selector switch on the lathe's control panel to the milling position.

g) Select L (Low) on the gear box.

h) Connect the machine to the mains supply, open the switch shroud and press the on button (Green), check the green power light comes on, lower the lid of the switch shroud (Do Not Close).

i) Turn the Speed Control Switch On (Clicks On).

j) Check the Amber LED (Fault Light) is illuminated and the green light is illuminated.

k) Turn the Speed Control to Off (Clicks Off), the Amber LED is now Off and the Green light stays on.

l) Turn the Speed Control Switch On and advance until the Chuck starts to rotate.

m) While it's running press the Emergency Stop button, check the machine stops, check that the green light and the Amber LED is on. Disengage the Emergency Stop button by opening the switch shroud, turn the Speed Control Switch to Off (All lights are off).

n) Press the on button, turn the Speed Control On and advance until the chuck starts to rotate.

o) Over a period of approximately 5 minutes advance the speed in stages to maximum, run at maximum for at least 2 minutes, check that there is nothing untoward, (no excessive vibration, speed progression is smooth etc.). Stop the spindle and change the gear selector to H (High), carry out the previous check.

p) If all the above checks are correct, stop the spindle, (turn the speed control to zero and press the Off button (Red). Push the Tri-lever feed handle in (if necessary 'joggle' the feed to enable the gears to mesh), exercise the quill up and down, check the movement is smooth and precise.

q) With the Tri-lever engaged, raise and lower the quill using the fine feed control. Check the movement is smooth and precise, there are no hard spots and the feed doesn't bind up. Disengage the tri-lever by pulling the assembly back.

r) Ensure the head lock clamp is loosened and exercise the rise and fall, driving the head up and down the tool post. Check the movement is smooth and tight. Leave the head fairly well down the tool post for the next check.

s) Loosen the 36mm tilt clamp bolt, to the rear of the tool post and tilt the tool post to the left or right, clamp the tool post in an arbitrary position and tighten the bolt. Check that the tool post remains locked in place.

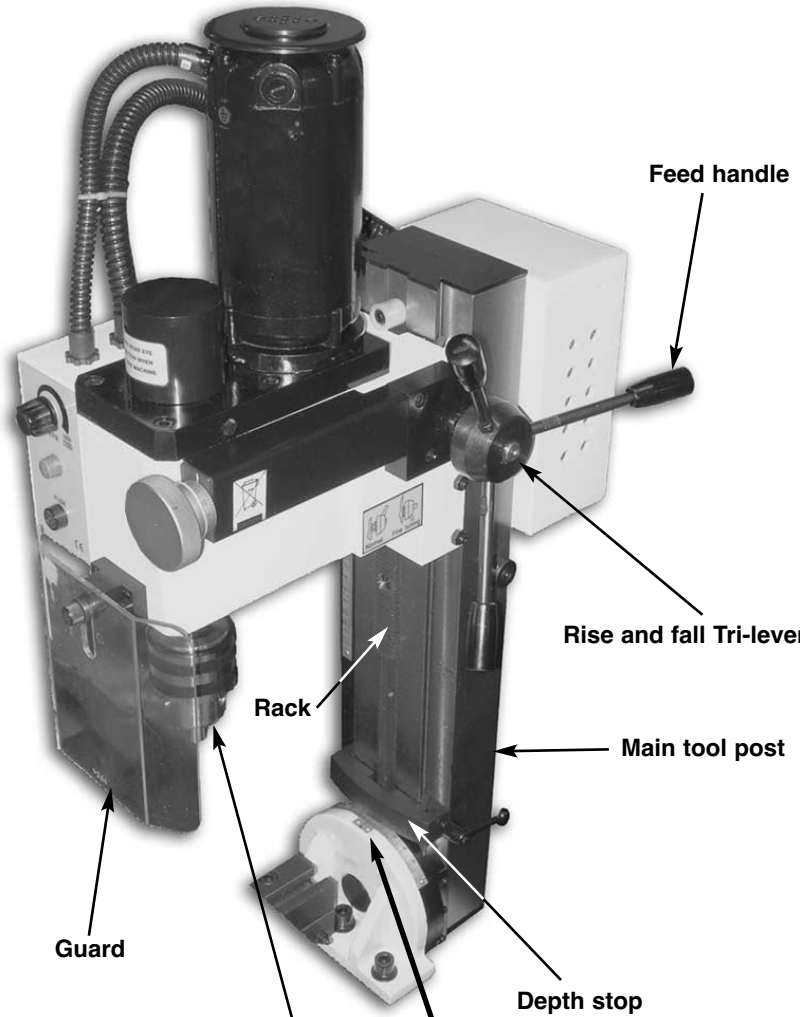
t) If all the above checks are correct, your mill is now ready for use.

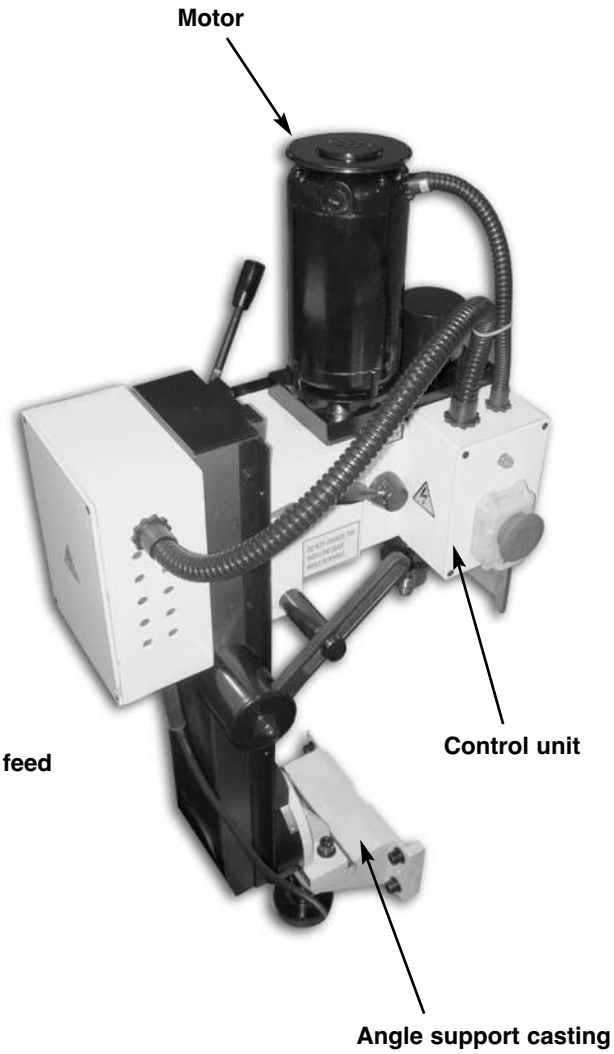
PARTS IDENTIFICATION AND DESCRIPTION

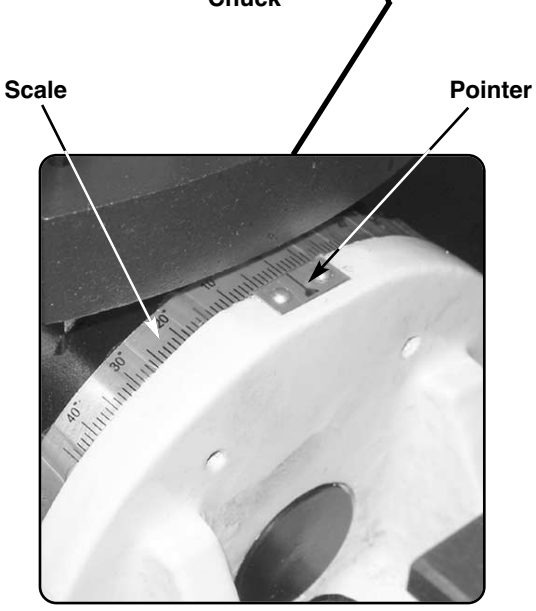
Please take some time to identify the various parts of your machine so that you are familiar with the terminology we will use to enable you to set up and operate your Mill safely and correctly.

Main tool post	This is the column of the mill, it is an 65 x 50 bar with a dovetail slide machined on the front onto which the milling head is mounted, the lower part there is a pre-drilled hole which slides over the tilt housing shaft and secured in place by a 36mm nut. On the left side of the post a scale, graduated in mm's, is mounted to read against a pointer mounted on the head casting.
Rise and fall mechanism	Rise and fall, there is a dovetail slide machined on each side of the the headbox support column which mounts a through shaft. A pinion gear is mounted on the shaft inside the headbox that meshes with a rack on the support column, driving the pinion shaft will cause the headbox to rise and fall up and down the headbox support column. The part of the shaft protruding from the headbox has a hole through it to mount the tri-lever feed assembly.
Tilt housing	The tilt housing is mounted to the base casting using 3 M8x30 caphead bolts and washers. The tool post is mated to the housing and clamped by a 36mm nut. The main tool post can tilt 45˚ from the vertical either left or right. There is a pointer and a scale mounted on the housing to give an indication of the amount of tilt that has been applied.
Milling head	**This is the 'milling machine' and the descriptions of its various parts and components are detailed as follows:-**
Milling head casting	The main casting to which all the components are attached. The head has a dovetail housing machined at the rear, which allows the casting to be fitted to the Main Tool Post. The left side of the dovetail slide is fitted with a gybe strip to maintain the fit.
Head clamp	Located to the right side of the main tool post above the gybe strip adjusters and locknuts is a handled bolt that clamps the gybe strip against the slide to effect a locking action for the rise and fall of the head.
Motor and gearbox	The motor and gearbox assembly are mounted above the main head casting at the top of the arbor sleeve. The motor drive is geared through to the spindle with an intermediate 2:1 gearbox.
Gear change lever	The gear change lever allows the selection of the high or low ratio of the gear train. The speed of the spindle is then governed by the speed control on the motor panel. (You may have to 'joggle' the chuck/tool to aid the meshing action).
Motor	A 220V d.c. motor rated at 350W.

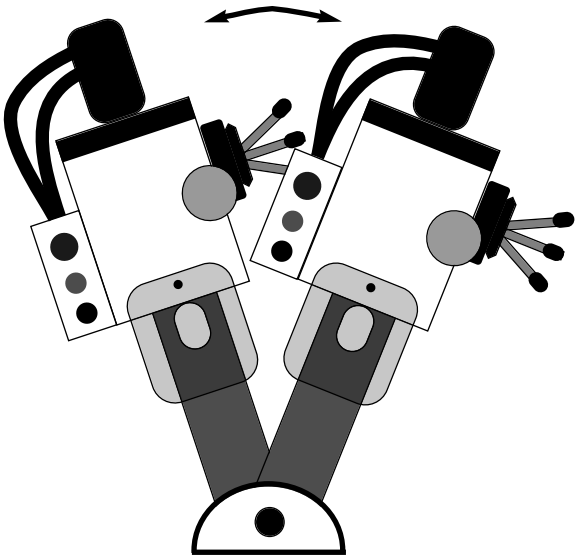
MACHINE ILLUSTRATION OF THE MILL







Tilt housing assembly



0-45˚tilt either direction

PARTS IDENTIFICATION AND DESCRIPTION

Tri-Lever feed

Three levered handle that is used to drive the quill (and hence the chuck or the tool) up and down. The boss of the handle is fitted to the end of a 'splined' gear shaft. This 'splined' gear is, in turn, engaged in the rack cut into the quill body. The other end of the 'splined' shaft is engaged in a contra-wound spring, this provides counter balance to the weight of the quill, arbor, chuck and drill, giving a more controlled 'feel' during drilling operations. It also retracts the quill when drilling is completed.

Fine feed assembly

The fine feed assembly floats around the splined gear shaft that drives the quill up and down. When the action of the fine feed mechanism is required; pushing the tri-lever feed handle in 'engages' the knob of the fine feed control meshes the gearing (you may have to 'joggle' the feed handle to aid the meshing action) between the splined shaft and the fine feed control shaft; this enables the spindle to be driven by the fine feed control wheel with greater precision. Behind the boss of the fine feed control wheel handle is a graduated ring (thimble) so that the movement of the quill can be measured. The thimble is held to the drive shaft by friction, and can be pre-positioned to establish a predetermined start or stop dimension.

Quill hold pocket

The size of the machine precludes any 'fancy' locking mechanism for the quill. There is a blind pocket on the spindle that accepts the tommy bar supplied in the tool kit, to enable the spindle to be held in position whilst the draw bar is loosened.

Draw bar cover

A moulded plastic cover that clips into the top of the Motor Gearbox assembly, to afford protection from the rotating top of the draw bar, when the quill is at the top of its travel.

Draw bar (unseen)

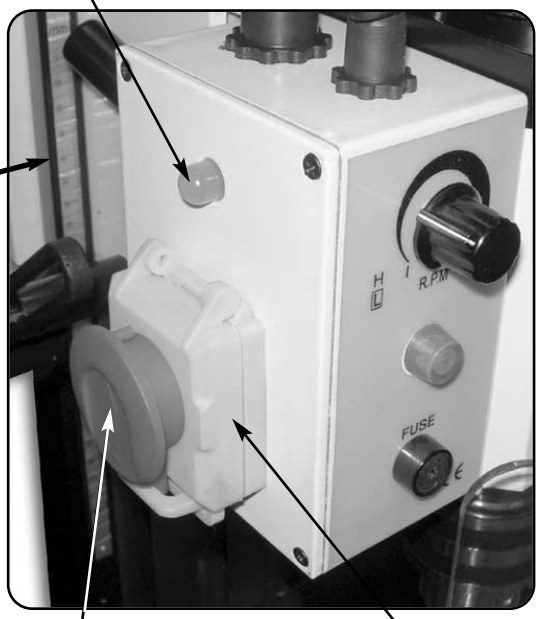
This is a metal rod, threaded at one end and with an 19mm squared shank and flange machined on the other. It is fitted through the spindle mandrel to hold the fitted tool/tooling hard into the No. 3 MT taper of the spindle shaft.

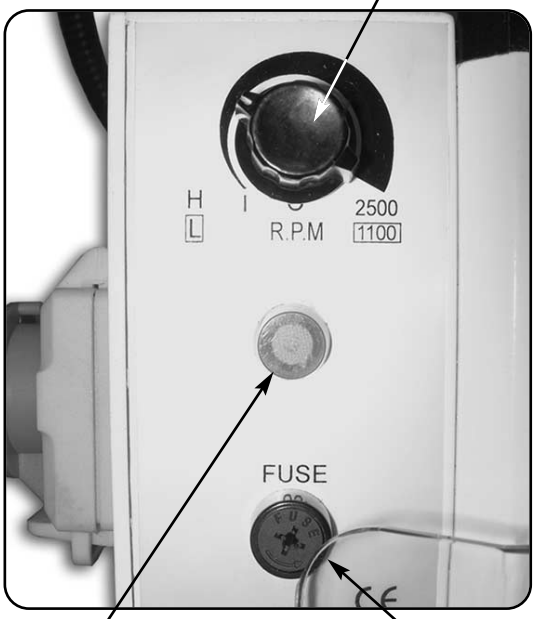
Motor control panel

Power On LED
Green LED that indicates that power is available to the motor. i.e. mains is applied, fuse is intact and the Emergency stop switch is not activated.

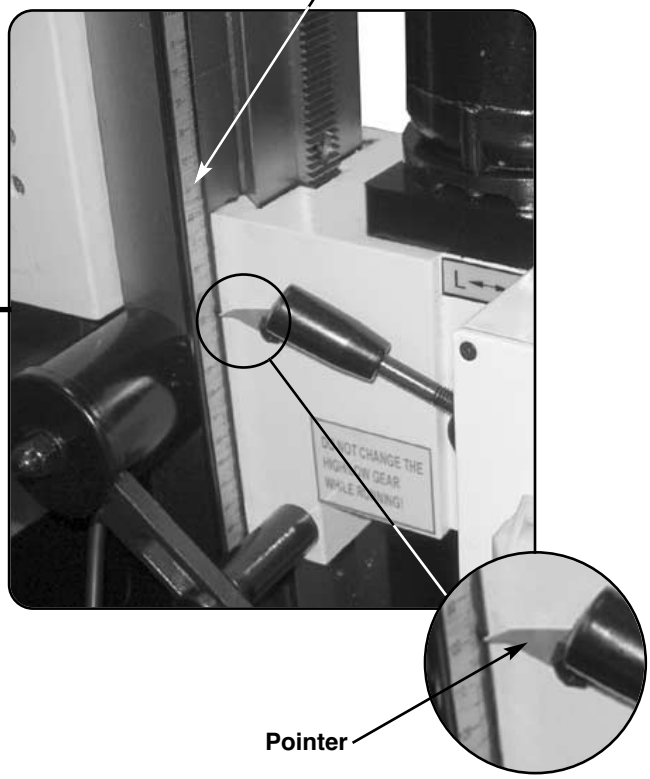
Fault LED (marked UN-NORMAL)
Amber LED that indicates that there is a fault or an incorrect control sequence. i.e. the chuck guard interlock has been activated or the speed control is activated. The Motor will not run if the fault LED is illuminated. If the safety interlock is activated, the safety interlock will remain in force until the interlock is reset and the start sequence re-initiated.

Fuse Cap
Access cap for the 20mm fuse cartridge (1 Amp 250V) Speed Control Knob Round raised ridge knob connected to the circuit that controls the spindle speed (0-1100 rpm or 0-2500 depending upon the gearbox selection).

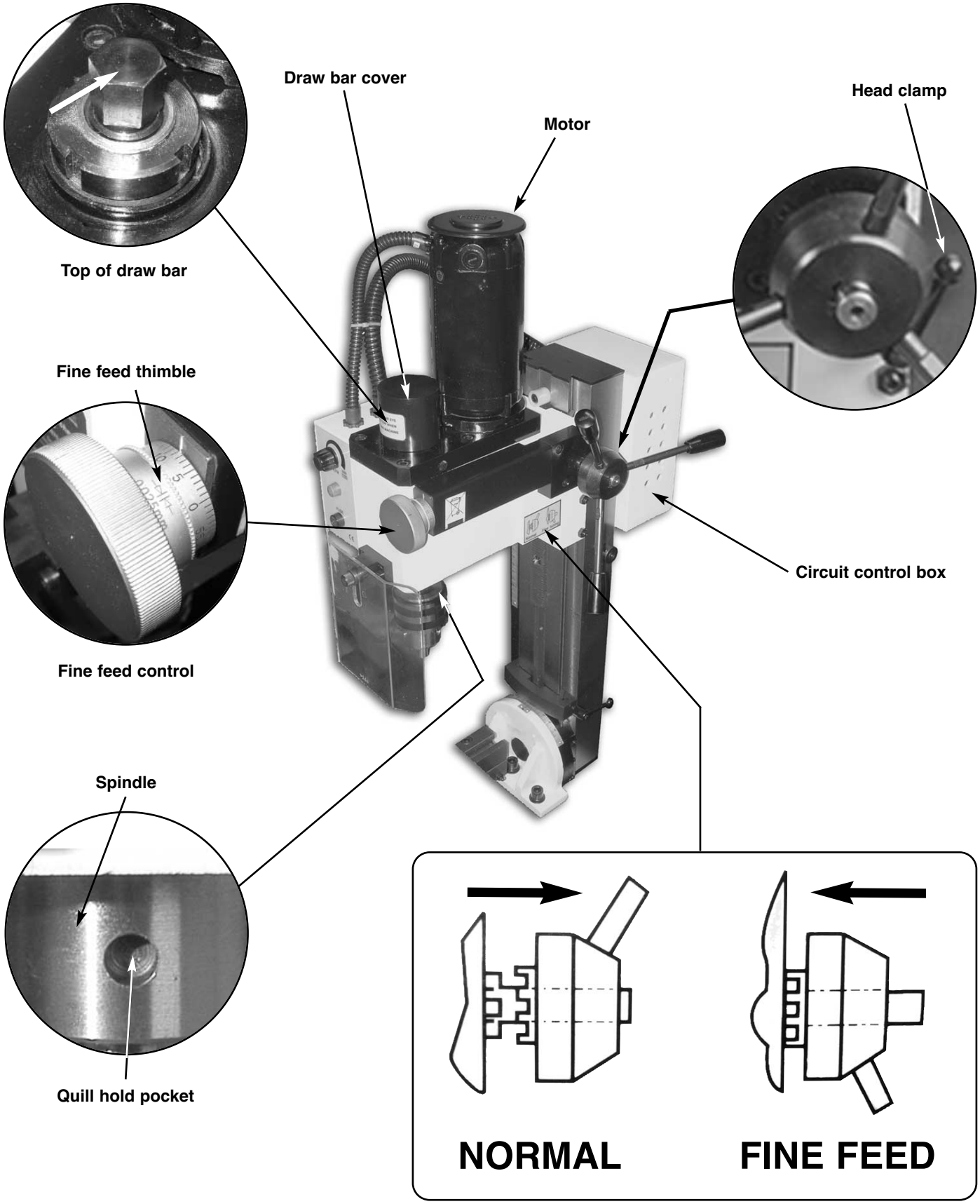




Gear change lever



MACHINE ILLUSTRATION OF THE MILL



To engage the fine feed control push the tri-lever assembly in until it meshes with the bevel gear. Pulling the tri-lever back will disengage the fine feed control.

Warning. Do not operate the mill in any function unless the head clamping lever is tightened.

TOOL CHANGING

Note. The taper socket in the spindle mandrel does not have a 'drive flat' and all tooling, including the drill chuck is secured and driven by the taper lock and the draw bar.

Make sure the power is switched off or better still remove the power from the machine.

Locate and put to hand the 19mm A/F spanner and the tommy bar. Remove the Draw Bar Cover. Hold the quill immovable by inserting the tommy bar into the quill hold pocket and loosen the draw bar. Unscrew two or three turns and then strike sharply with a hammer (preferably a copper face, to prevent the head of the draw bar peining over) this will break the lock between the tool and the spindle tapers .

Unscrew the draw bar from the tool. **Ensure the tool is supported**, i.e. will not fall onto the workpiece/table et al. When it is free put the tool carefully aside, remove the draw bar, check the thread, check the taper and the thread of the new tool are clean and undamaged, introduce the new tool into the taper, re-insert the draw bar and screw into the top of the tool.

Screw in the draw bar finger tight. Hold the quill immovable and tighten with the spanner. **DO NOT OVERTIGHTEN**. Replace the draw bar cover.

Remove all tooling and reconnect the machine. Ensure the tool path is clear, switch on, and check that the tool is correctly seated, is running true etc. If all is O.K, proceed.

GERERAL SAFETY POINTS

Milling (all cases)	Ensure the workpiece is securely clamped to the table.
Along the longitudinal Axis (X)	Ensure that the quill is locked in position before milling is commenced. Ensure the traverse slide lock is tightened.
Along the Traverse Axis (Y)	Ensure that the quill is locked in position before milling is commenced. Ensure the worktable lock is tightened.
Milling or Drilling Vertically (Z)	Ensure the traverse slide and the worktable locks are tightened.

SETTING AND ADJUSTMENTS

Milling head adjustment

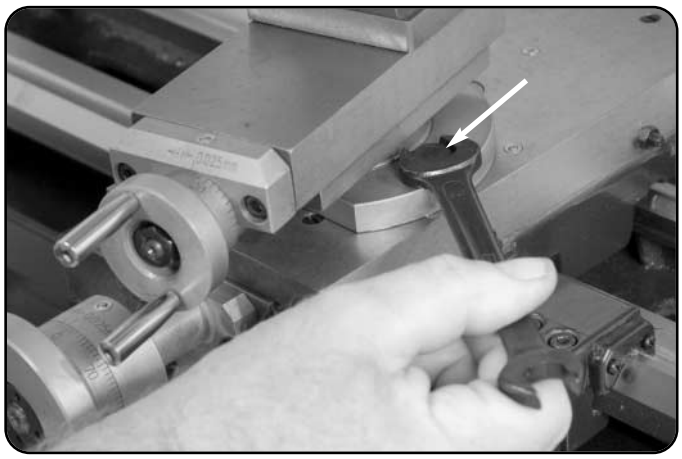
The Milling Head is mounted over a dovetail section. In order to maintain the 'tightness' of the fit; between the sloping surface of the component and its mating surface, on the right hand side, a gybe strip has been inserted. To adjust the gybe strip, use the supplied allen key and spanner, release the lock nuts and screw the gybe strip grubscrews clockwise to compensate for any slackness or anti-clockwise to loosen the movement. Check, using the rise and fall drive feed handles, that the head moves smoothly, If not, repeat the adjustments until the movement is smooth and tight over the whole of the travel.

MILL TABLE ASSEMBLY

The Mill/Drill includes a milling table as an accessory. To install the milling table the compound slide must be removed from the cross slide from the lathe bed. Once installed, the milling table can move back and forth with the cross slide. Follow the instruction below to install table.

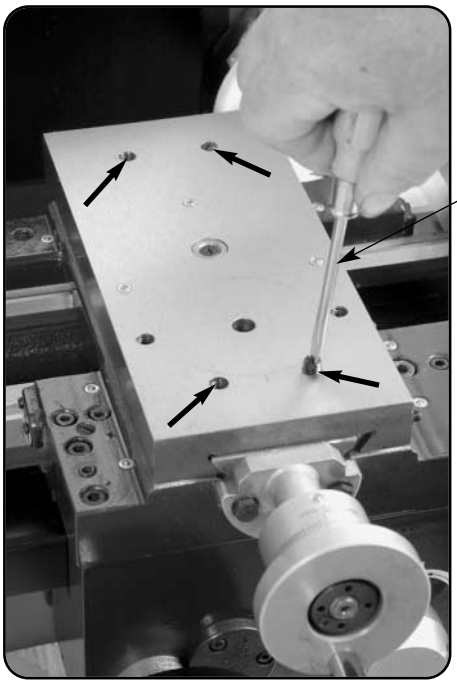
1) Using a 12mm spanner remove the two bolts that secure the compound slide to the cross slide, remove the compound slide and place safely aside. (See fig A)

Fig A



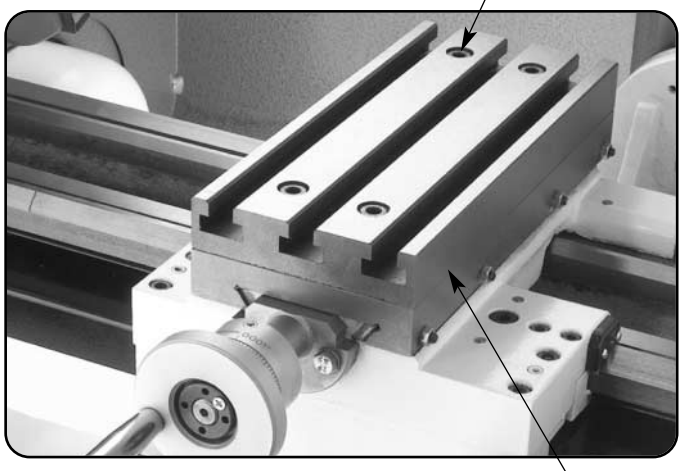
Remove the two bolts using a 12mm spanner, remove the compound slide from the cross slide.

Fig B



2) Using a Phillips screwdriver remove the four grub screws from the cross slide and place safely aside. (See fig B)

Fig C



3) Locate the milling table and the supplied caphead bolts. Lower the table onto the cross slide, line up the holes and insert and secure the table using a 6mm allen key. (See fig C)

Your Mill is a precision tool. In order to maintain this precision and prolong its useful life, it is advised that you follow the recommended daily and periodic maintenance tables printed below.

Daily and Periodic Maintenance

Daily

1. Carry out a visual inspection. Repair any damage immediately. Minor damage to the beds should be taken out with an oilstone.
2. Move the worktable and the traverse feed back and forth by hand, check that the movement is smooth.
3. Spread a light film of oil over the worktable and the traverse slide bed.
4. Oil the end bearings of the drive shafts. Squirt oil onto the slide faces of mating components.
5. Exercise the components to ensure the oil is spread over both visible and obscure surfaces.

Daily after-use

1. Clean all swarf and chips away from the machine bed, slide surfaces, and the tool post.
2. Exercise the slides and ensure no swarf etc., is lodged in the drive shaft tunnels. If you have been using a coolant make sure the machine is thoroughly dried off.
3. Check the tool, ensure it is usable the next time, if not re-sharpen or replace the tool tip.
4. Lightly oil spray all the machine beds and surfaces.
5. Clean and lightly oil any tools you may have been using (drill chucks, spanners, chuck keys etc), and put them away.
6. Switch off the power supply. Disconnect the plug.
7. Cover the machine over with a dust cloth.

Weekly

1. Move the traverse slide fully back to give access to the tunnel, blow out to make sure all swarf is cleared away and heavily spray oil the tunnel, exercise the slide to work the oil into the drive thread and to lubricate the dog.
2. Spray oil the slide and the worktable bed, exercise the worktable to spread the oil to all surfaces, both hidden and visible.
3. Spray oil the underside of the machine onto the drive screws, exercise to ensure the oil is coating all components.
4. Clean and spray oil the rise and fall drive screw, exercise to ensure all parts are coated.
5. Check the movement of the worktable, the traverse slide and the head, check they are smooth and 'tight', if necessary reset the gybe strips until the movements are smooth and tight.
6. Wipe the quill outer sleeve clean and lightly oil, exercise the quill to spread the oil in the sleeve bushes.

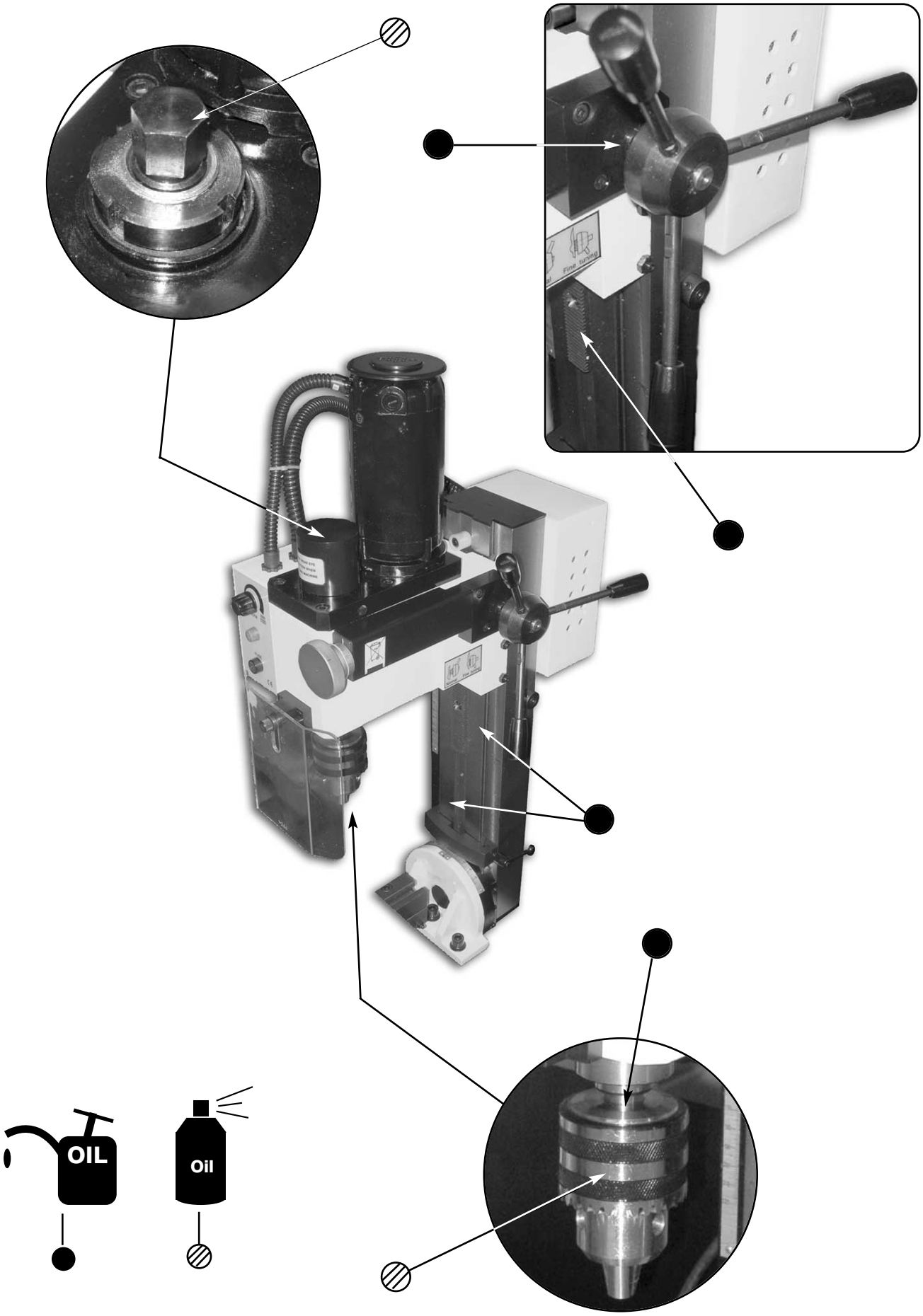
Monthly

a) Give the motor a good 'blow through' to remove any dust, dirt etc,
b) Check all the interlocks function correctly.

Accessories

There are numerous accessories for the machine listed in the Axminster catalogue.
Some are illustrated at the rear of this manual. (See page 47)

MAINTENANCE OILING POINTS



Rotary Milling Vice for Micro Mill 55mm

Part No: (100034)

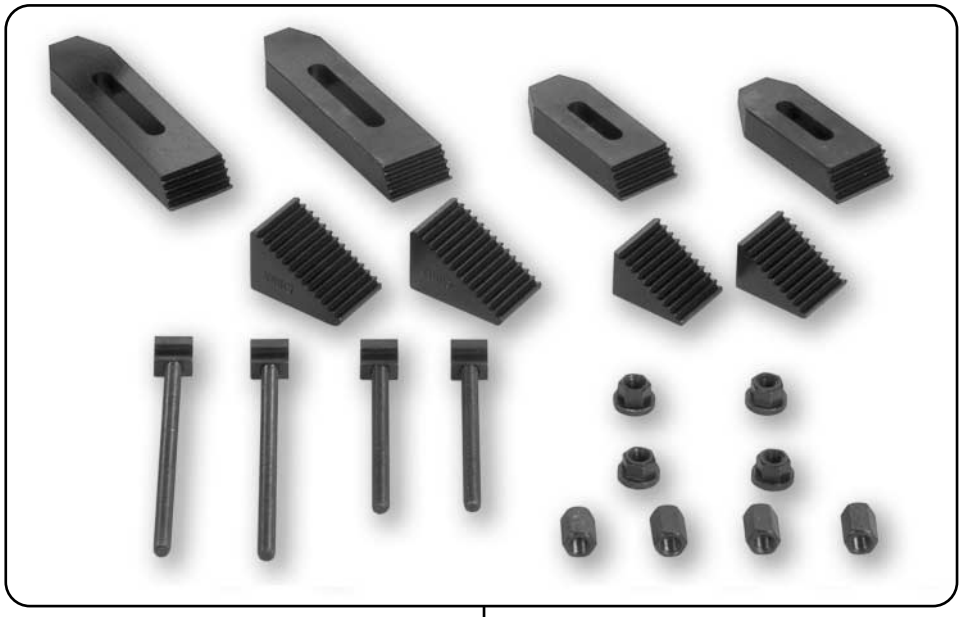
Axminster Micro Mill Collets

#2MT 6mm collet
Part No: (100023)

#2MT 10mm collet
Part No: (100024)

50mm Release Vise

Quick vice 50mm
Part No: (100022)



Micro Mill Clamping Kit

Clamping kit
Part No: (100033)

Axminster Bull Nose Slot Drills

Metric Screwed Shank Two Flute Bull Nose Slot Drills

Code	Description
610170	Bull Nose Slot Drill 3mm
610171	Bull Nose Slot Drill 4mm
610172	Bull Nose Slot Drill 6mm
610173	Bull Nose Slot Drill 8mm
610168	Bull Nose Slot Drill 10mm

Axminster HSS End Mills

Metric Screwed Shank Three Flute End Mills.

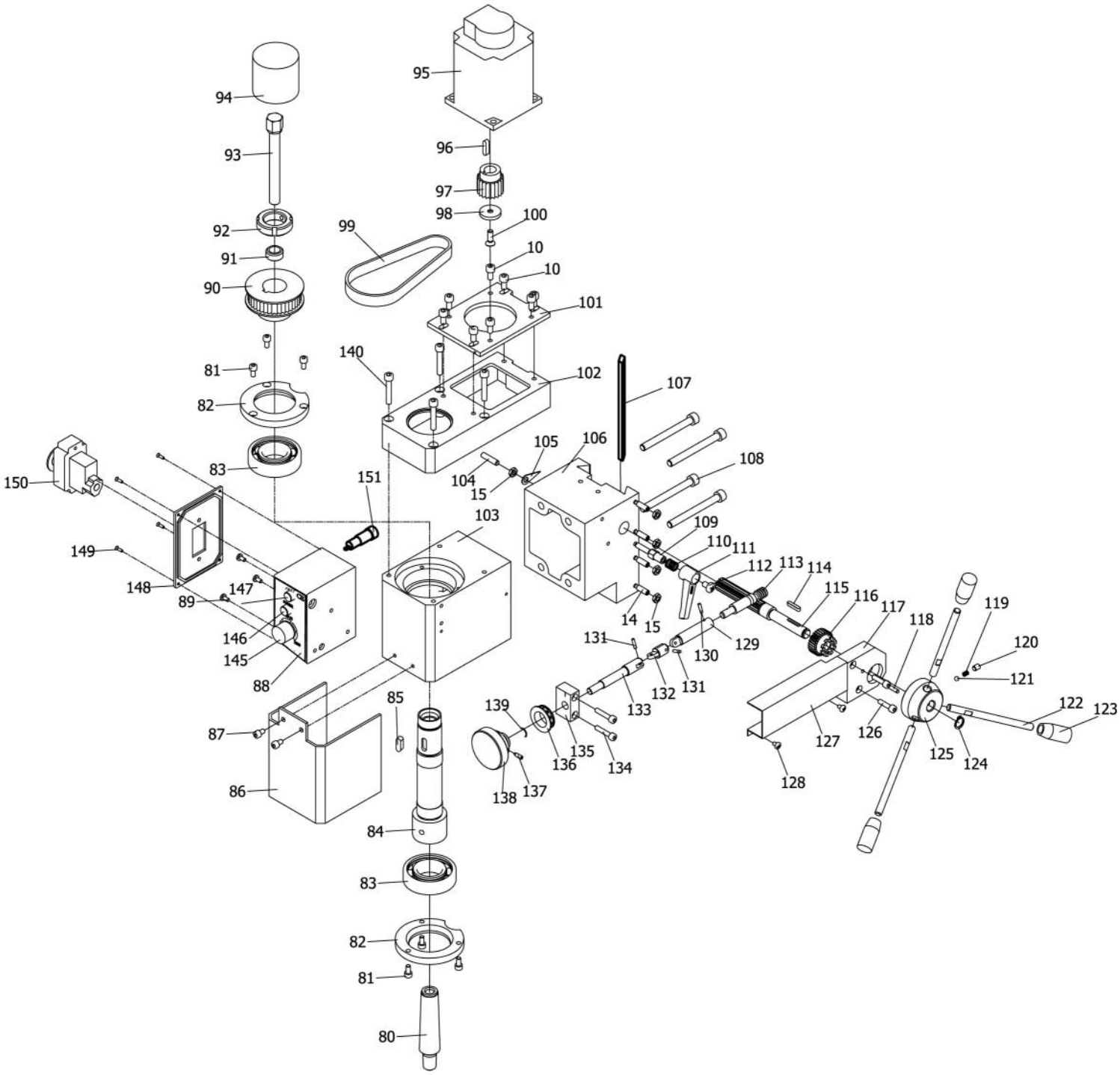
Code	Description
610177	3mm End Mill
610178	4mm End Mill
610179	6mm End Mill
610180	8mm End Mill
610174	10mm End Mill

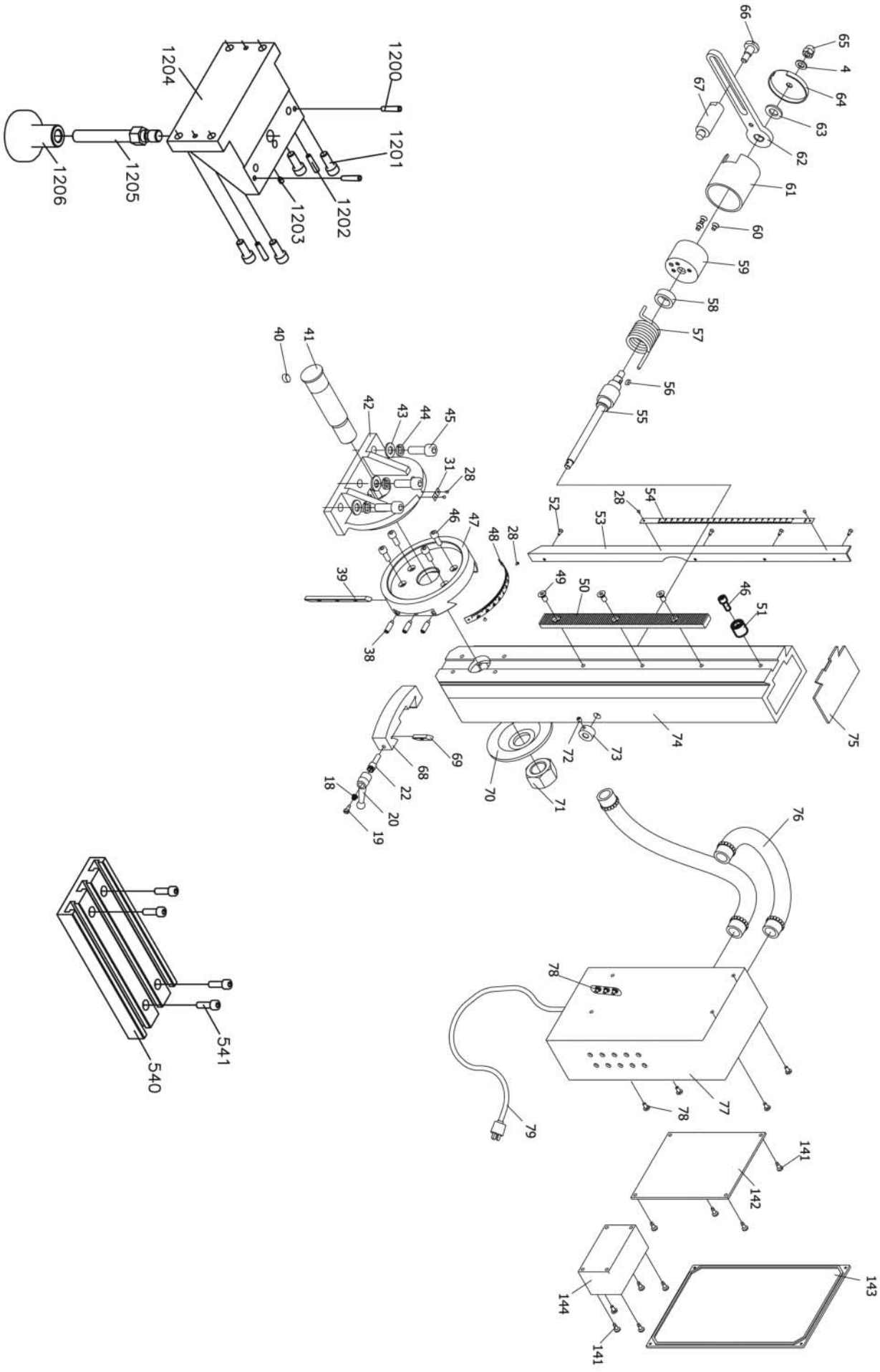
Axminster HSS Slot Drills

Metric Screwed Shank Two Flute Slot Drills.

Code	Description
610184	Slot Drill 3mm
610185	Slot Drill 4mm
610186	Slot Drill 6mm
610187	Slot Drill 8mm
610181	Slot Drill 10mm

PARTS BREAKDOWN FOR THE MILL

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PARTS LIST FOR THE MILL

No.	Description	Qty
4	Washer	1
10	Screw	8
14	Screw	4
15	Nut	5
18	Spring	3
19	Screw	3
20	Handle	1
22	Bolt	3
28	Screw	4
31	Guide finger	1
38	Screw	3
39	Wedge	1
40	Key	1
41	Shaft	1
42	Bracket	1
43	Washer	3
44	Washer	3
45	Screw	3
46	Screw	5
47	Connect tray	1
48	Ruler	1
49	Screw	3
50	Gear	1
51	Fixed sleeve	1
52	Screw	4
53	Bracket	1
54	Ruler	1
55	Shaft	1
56	Key	1
57	Spring	1
58	Washer	1
59	Spring sleeve	1
60	Screw	3
61	Cover	1
62	Support	1
63	Washer	1
64	End cover	1
65	Nut	1
66	Screw	1
67	Support	1
68	Limit block	1
69	Wedge	1
70	Washer	1
71	Nut	1
72	Screw	1
73	Tighten ring	1
74	Colum	1
75	Cover	1
76	Power line	2

No.	Description	Qty
77	Electric box	1
78	Screw	7
79	Plug	1
80	Shank	1
81	Screw	6
82	Oil cover	2
83	Bearing	2
84	Spindle	1
85	Key	1
86	Dustproof	1
87	Screw	2
88	Control box	1
89	Screw	3
90	Spindle pully	1
91	Fixed sleeve	1
92	Spindle nut	1
93	M12 drawbar	1
94	Cover	1
95	Brushless motor	1
96	Key	1
97	Motor pully	1
98	Washer	1
99	Pully	1
100	Screw	1
101	Connected board	1
102	Cover	1
103	Spindle box	1
104	Screw	1
105	Indicator	1
106	Spindle base	1
107	Wedge	1
108	Screw	4
109	Bolt	1
110	Spring	1
111	Small handle	1
112	Screw	1
113	Worm	1
114	Key	1
115	Gear 14T	1
116	Gear 29T	1
117	Worm support	1
118	Pin	1
119	Spring	1
120	Screw	1
121	Ball bearing	1
122	Handle	3
123	Handle sleeve	3
124	Washer	1
125	Handle seat	1

No.	Description	Qty
126	Screw	2
127	Cover	1
128	Screw	2
129	Sleeve	1
130	Pin	1
131	Pin	2
132	Universal joint	1
133	Universal shaft	1
134	Screw	2
135	Bracket	1
136	Dial	1
137	Screw	1
138	Small handle	1
139	Spring	1
140	Screw	4
141	Screw	8
142	PC board	1
143	Cover	1
144	Filter	1
145	Button	1
146	Green lamp	1
147	Yellow lighting pipe	1
148	Cover	1
149	Screw	8
150	Switch	1
1200	Pir	2
1201	Screw M10*25	4
1202	Pir	2
1203	Screw M6*8	1
1204	Angle suppor	1
1205	Bol	1
1206	Support plat	1

ATTACHMENT

540	Work table	1
541	Screw M8*25	4